Detrex CORPORATION

P.O. BOX 5111 • SOUTHFIELD, MI 48086-5111 • (810) 358-5800 • FAX (810) 358-5803

March 17, 1997

Ms. Ronda L. Blayer
Senior Environmental Engineer
Department Of Environmental Quality
Waste Management Division
P.O. Box 30241
Lansing, Michigan 48909-7741

Re: Status Of RFI/FS For Detroit Eaton Avenue Facility

Dear Ms. Blayer:

As you undoubtedly recall, I called you last summer and advised you that the results of the cored samples from the Detroit Eaton Avenue Facility investigation were forwarded to the U.S.EPA without a report. I then posed the question as to whether Detrex is expected to follow with a report or await further instructions. You indicated that you have to contact Region V to get their response to that question. After contacting them you advised me not to do anything until we hear from the U.S. EPA.

Since we have not received any response, we will maintain our present status pending further notice.

This will confirm our phone conversation of March 5, 1997. Thank for your cooperation in this matter.

Sincerely,

Issa H. Shamiyeh

Issa H. Shamiyeh
Director, Risk Management

cc: Ms. Shari Kolak, DRP-8J
Michigan Permits Section
Waste, Pesticides, & Toxic Division
U.S. EPA, Region V
77 West Jackson Boulevard
Chicago, Illinois 60604

soil and materials engineers, inc.
43980 Plymouth Oaks Blvd. Plymouth, MI 48170-2584 (313) 454-9900 FAX (313) 454-0629

Kenneth W. Kramer, PE
Richard O. Anderson, PE
Frank A. Henderson, PG
Garrett H. Evans, PE
Starr D. Kohn, PhD, PE
Edward S. Lindow, PE
Robert C. Rabeler, PE
Gerald M. Belian, PE
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Cheryl Kehres-Dietrich, CGWP
Larry P. Jedele, PE
Gerard P. Madej, PE
Timothy H. Bedenis, PE
J. William Coberly, CET
Chuck A. Gemayel, PE
Jerry B. Givens, PE
Truman F. Maxwell, CPA
Timothy J. Mitchell, PE
John C. Zarzecki, CWI

June 2, 1994

Ms. Rhonda Blayer, Senior Environmental Engineer
Michigan Department of Natural Resources
Hazardous Waste Division - Permitting
John H. Hanna Building
P.O. Box 30241
Lansing, MI 48909

RE: Revised Tasks I, II, RFI Workplan and DEAR
Detrex Corporation
12886 Eaton Avenue
MID 091 605 972
SME Project No. PE-21229

1964 30 1994 Years of Service

Dear Ms. Blayer:

Soil and Materials Engineers, Inc. (SME) has been retained by Detrex Corporation to assist them in revising Tasks I, II, RFI Workplan and DEAR, as well as in carrying out the RFI. SME has made revisions to the document to serve the following purposes:

(1) to respond to U.S. EPA and MDNR review comments summarized in a letter dated March 1, 1994;

(2) to remove references in the document to Testing Engineers and Consultants, Inc. and add language regarding the use of a U.S. EPA approved contract laboratory; and

(3) to add clarifying language where SME believed appropriate.

Text changes were made by striking over deleted text and underlining inserted text. This was done to aid in the review process.

SME has revised some figures and charts as follows:

Section 1	Attachment 1	USGS Topography Map
Section 3	Attachment 1	Project Organizational Chart
Section 3	Attachment 2	Project Timeline
Section 3	Attachment 3	Project Personnel Qualifications
Section 4	Attachment 1	USGS Topography Map
Section 4	Attachment 3	Previous Sample Locations
Section 4	Attachment 6	Proposed Sample Location Diagram
Section 4	Attachment 7	Boring Log Example
Section 6	Attachment 2	Contingency Plan (new attachment)

Additionally, SME will prepare another document with all editing marks (strikeovers for deleted text and underlining for new text) removed from the Revised Tasks I, II, RFI Workplan and Dear. This document will follow at a later date.

If you have any questions or comments on this submittal, you may contact us at (313) 454-9900.

Very truly yours,

SOIL AND MATERIALS ENGINEERS, INC.

CA Kehres-Dietrich
for
Laura S. Badalamenti
Project Hydrogeologist

Robert J. Nowakowski, CPG
Project Consultant

Enclosure: Draft Revised Tasks I, II, RFI Workplan and DEAR

cc: Karl Bremer, USEPA - Region V
Bill Moore, Detrex Corporation
Ron Swan, Detrex Corporation

DETREX CORPORATION

EATON AVENUE FACILITY
DETROIT, MICHIGAN

DETREX CORPORATION
P.O. BOX 5111
SOUTHFIELD, MICHIGAN 48086-5111

June 2, 1994

Consultants in the geosciences, materials and the environment

- *Caissons*
- *Corrosion*
- *Dewatering*
- *Earth Retention Systems*
- *Foundation Engineering*
- *Geodynamics/Vibrations*
- *Geophysical Surveys*
- *Geotextiles*
- *Ground Modification*
- *Piles*
- *Slope Stability*
- *Building Restoration*
- *Coatings*
- *Concrete*
- *Construction Quality Control*
- *Masonry/Stone*
- *Metals*
- *Pavements*
- *Roofs*
- *Sealants*
- *Structural Steel*
- *Waterproofing*
- *Air Quality*
- *Asbestos*
- *Compliance Audits*
- *Environmental Site Assessments*
- *Hydrogeologic Studies*
- *RCRA Compliance*
- *Remediation*
- *Storm Water Discharge*
- *Underground Storage Tanks*
- *Waste Minimization*
- *Wetlands*

soil and materials engineers, inc.

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John C. Zarzecki, CWI

30 Years of Service

June 3, 1994

Mr. Karl E. Bremer, Chief
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

RE: Revised Tasks I, II, RFI Workplan and DEAR
Unedited version
Detrex Corporation
12886 Eaton Avenue
MID 091 605 972
SME Project No. PE-21229

Dear Mr. Bremer:

Soil and Materials Engineers, Inc. (SME) has been retained by Detrex Corporation to assist them in revising Tasks I, II, RFI Workplan and DEAR, as well as in carrying out the RFI. The Revised Tasks I, II, RFI Workplan and Dear was sent to the U.S. EPA on June 2, 1994. That document included all corrections (strikeovers for deleted text and underlining for new text) that was made to the original Tasks I, II, RFI Workplan and Dear as a result of the review by the U.S EPA - Region V. This was done to aid in the review process of the revised document.

To further help in the review process, SME is submitting the enclosed document as a duplicate of the June 2, 1994 issue of the Revised Tasks I, II, RFI Workplan and Dear without the editing marks (strikeovers and underlining).

If you have any questions or comments on this submittal, you may contact us at (313) 454-9900.

Very truly yours,

SOIL AND MATERIALS ENGINEERS, INC.

Laura S. Badalamenti
Project Hydrogeologist

Robert J. Nowakowski, CPG
Project Consultant

Enclosure: Revised Tasks I, II, RFI Workplan and DEAR - unedited

cc: Rhonda Blayer, MDNR
Bill Moore, Detrex Corporation
Ron Swan, Detrex Corporation

soil and materials engineers, inc.

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June 2, 1994

Mr. Karl E. Bremer, Chief
United States Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

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Detrex Corporation
12886 Eaton Avenue
MID 091 605 972
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Very truly yours,

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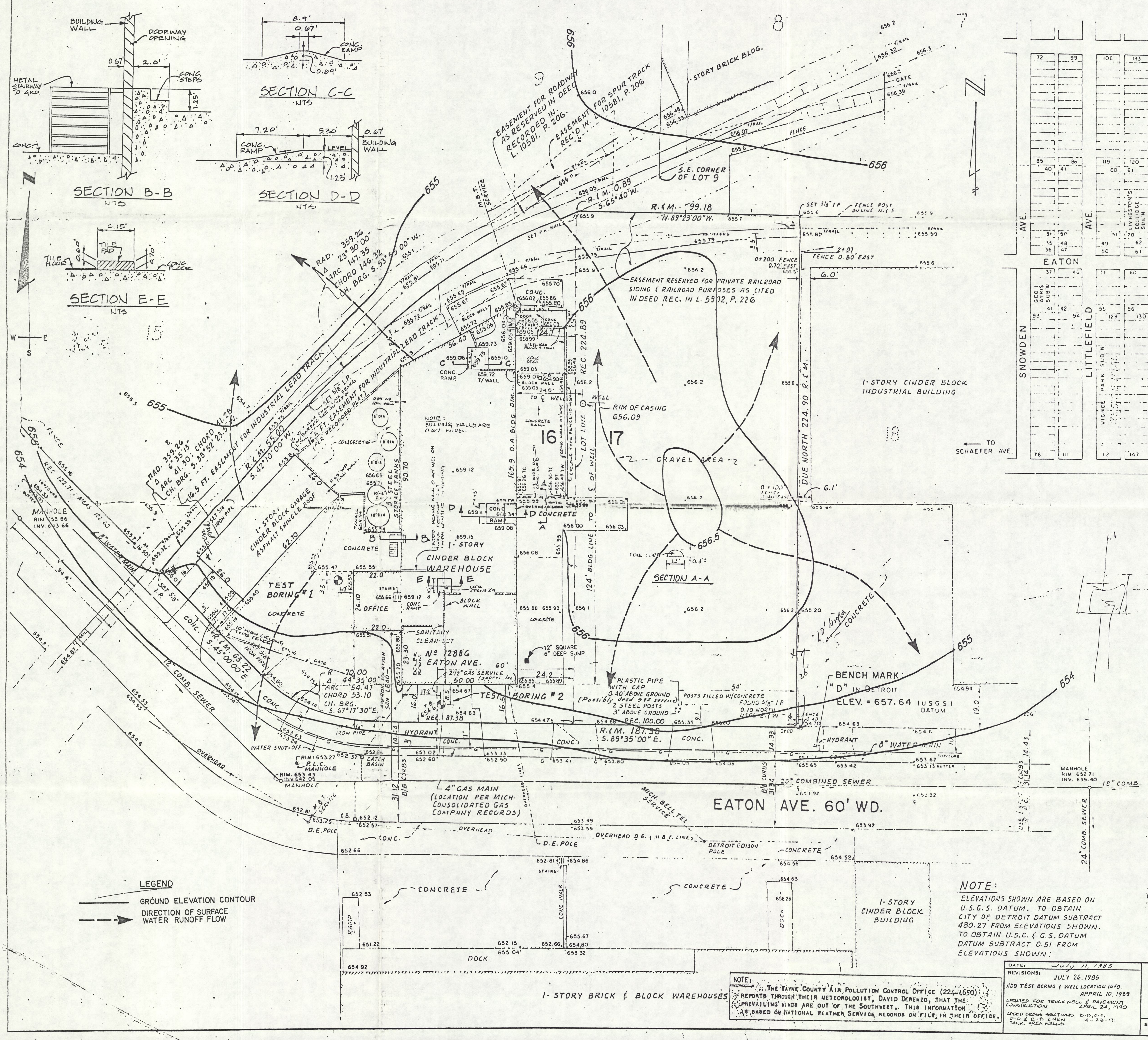
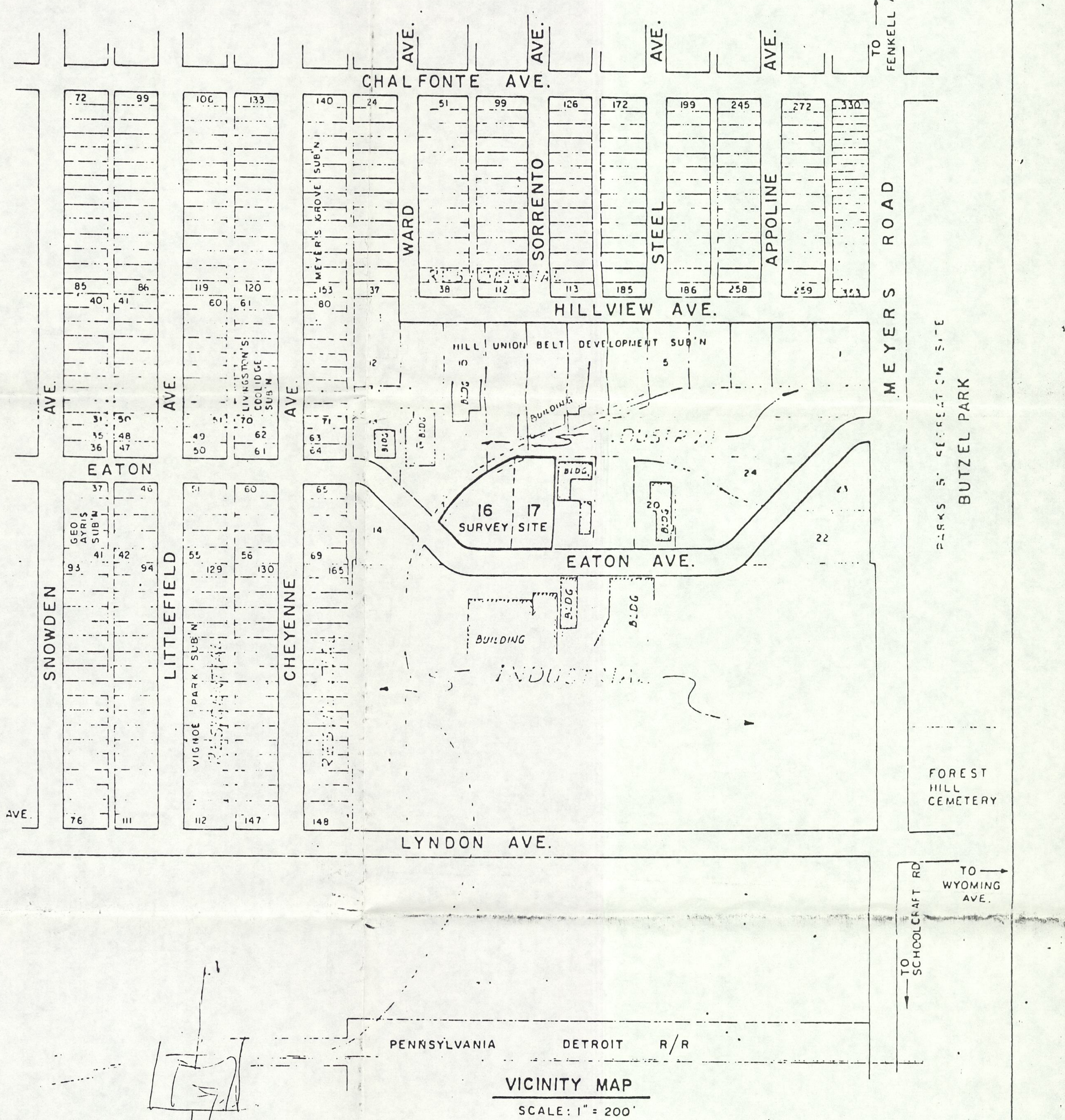


NOTE:

ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM. TO OBTAIN CITY OF DETROIT DATUM SUBTRACT 480.27 FROM ELEVATIONS SHOWN. TO OBTAIN U.S.C. & G.S. DATUM DATUM SUBTRACT 0.51 FROM ELEVATIONS SHOWN:



VICINITY MAP

SCALE: 1" = 200'

LEGAL DESCRIPTION

LOTS 16 AND 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION", BEING THE N. 1/2 OF THE S. E. 1/4 OF THE N. W. 1/4 OF SEC. 20, T. 1 S., R. 11 E., CITY OF DETROIT, WAYNE COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR WAYNE COUNTY, MICHIGAN IN LIBER 60 OF PLATS ON PAGE 62;

SUBJECT HOWEVER TO A PERMANENT EASEMENT HERETOFORE GRANTED TO THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD OVER A STRIP OF LAND ON THE N'LY SIDE OF SAID LOTS FOR AN INDUSTRIAL RAILROAD TRACK AS PER DEED RECORDED IN L.2298 OF DEEDS ON P. 176-178 WCR, AND,

RESERVING TO THE SELLERS, THEIR HEIRS AND ASSIGNS, AN EASEMENT OVER AND ACROSS THE N.W.'LY AND N'LY REAR PORTIONS OF SAID LOTS 16 & 17 DESCRIBED AS ALL THAT PORTION OF SAID LOTS LYING N'LY AND N.W.LY OF A LINE EXTENDING ACROSS SAID LOTS THAT IS 8½ FEET S'LY OF THE CENTER OF THE RAILROAD SIDING AS PRESENTLY INSTALLED AND IN USE CONNECTING WITH THE TRACK OF THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD COMPANY; THE SAID EASEMENT TO COVER THE RIGHT TO USE THE SAME FOR PRIVATE RAILROAD SIDING AND RAILROAD SERVICES OVER SAME TO THE SAID PENNSYLVANIA, OHIO AND DETROIT RAILROAD JOINTLY WITH ALL OTHER OWNERS OF LOTS 18, 19, 20, 21, 22, 23 AND 24 OF HILL UNION BELT DEVELOPMENT SUBDIVISION AFORESAID, SO THAT RAILROAD SERVICE MAY BE HAD BY ALL OTHER OWNERS ALONG THE LENGTH OF THE SIDING AS NOW INSTALLED AND IN USE.

NOTE:

ABOVE DESCRIPTION IS FROM DEED TO DETROIT REX PRODUCTS COMPANY DATED DEC. 30, 1941, RECORDED JANUARY 8, 1942 IN LIBER 5902, DEEDS, PAGE 226.

CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY HEREON DELINEATED AND THAT THE DISTANCES SHOWN ARE TRUE AND CORRECT BY ACTUAL FIELD MEASUREMENTS AND THAT THERE ARE NO ENCROACHMENTS UNLESS OTHERWISE SHOWN.

WARNER, CANTRELL & PADMOS, INC.

DATE: July 11, 1985 BY: Donald A. Beaupied

DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512

ATTACHMENT B-2

NOTE: THE WAYNE COUNTY AIR POLLUTION CONTROL OFFICE (224-4650) REPORTS THROUGH THEIR METEOROLOGIST, DAVID DERENZO, THAT THE PREVAILING WINDS ARE OUT OF THE SOUTHWEST. THIS INFORMATION IS BASED ON NATIONAL WEATHER SERVICE RECORDS ON FILE IN THEIR OFFICE.

DATE: July 11, 1985

REVISIONS: JULY 26, 1985

ADD TEST BORING & WELL LOCATION INFO. APRIL 10, 1989

UPDATED FOR TRUCK WELL & PAVEMENT CONSTRUCTION APRIL 24, 1990

ADDED CROSS SECTIONS B-B, C-C, D-D & E-E & NEW TANK AREA WALLS 4-23-91

PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N.1/2 OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T.1S., R.11 E., CITY OF DETROIT, WAYNE CO., MICH. (L.60, P. 62)

SCALE: 1" = 20'

DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
20788 ORCHARD LAKE RD.
313-478-9494 FARMINGTON HILLS, MI. 48336

JOB NO.

PLAN FILE

N.B. 614

SHEET 1 OF 1

TABLE OF CONTENTS

(Sections)

SECTION 1

DESCRIPTION OF CURRENT CONDITIONS

DETREX CORPORATION
MID 091 605 972

TASK 1

TABLE OF CONTENTS

SECTION 1

DESCRIPTION OF CURRENT CONDITIONS

TASK 1

1. FACILITY BACKGROUND

This portion will summarize the original location, pertinent boundary features, general facility physiography, hydrogeology, and historical use of the facility for the treatment, storage, or disposal of solid and hazardous waste.

1.1 Topographic Maps

The Detrex facility is located at 12886 Eaton Avenue in the City of Detroit, Michigan. The geographic location for this site is latitude 42° 23' 5'' and 83° 10' 22''. A Site Location Map, indicating the location of the site as taken from the USGS Topographic Map, Royal Oak Quadrangle (1968, photo revised 1981), is presented in Attachment 1-1. The location of the site on the USGS map is T01S, R11E, in the SE 1/4 of the NW 1/4 of Section 20.

The topography of the site is generally level, with a maximum difference of 2.5 feet in elevation from the highest point to the lowest point on the site. A map detailing the site topography and surface drainage is presented in attachment 1-2. The surface water runoff is directed away from the buildings, with the exception of an area along the east wall. The water at this point is collected in a sump and is tested to insure proper disposal, if needed. There are no wetland areas on or in the vicinity of the site.

1.2 Land Use

The property is bordered to the north and west by a railroad easement; to the south by Eaton Avenue; and to the east by the Detroit Non-Ferrous Foundry, Inc. The zoning for the subject property and the property to the east and west ~~is~~ M-4; Intensive Industrial. The surrounding~~remaining~~ areas are zoned R-1, Residential.

1.3 Legal Boundaries

A copy of the most recent legal survey of the property owned by the Detrex Corporation, along with the legal description, is provided in Attachment 1-3. The survey map shows ~~all~~ buildings, utilities, paved areas, easements, and right-of-ways.

1.4 Flood Control

A Flood Insurance Rate Map (FIRM), dated 02 July 1981 was reviewed for any floodplains that may be located on or near the facility. No 100 year floodplains are located in the area of this facility; in fact, the closest one is located approximately 4.5 miles west (Rouge River). The loading/unloading area secondary containment system has been designed to accommodate a 24 hour 100 year rainfall event. The site has containment systems around all storage tanks. The FIRM is presented in Attachment 1-4.

1.5 Storage and Treatment Areas

Numerous storage tanks for waste process feed, product and regenerated solvents ~~the hazardous wastes that are new, used, or regenerated solvents, and treatment systems for the regeneration of the spent solvents,~~ are located throughout the site. A map showing the locations of the tanks and process equipment ~~treatment locations~~ is presented in Attachment 1-5. No underground storage tanks (USTs) are located on the property.

1.6 Existing Monitoring Wells

Two monitoring wells are located on the subject property. These two wells are located on the east side of the building, in the center of the property. BH-MW1-89 was completed on 05 April 1989, and BH-MW2-91 was completed on 09 October 1991. BH-MW1-89 was drilled to a depth of 110 feet below the ground surface. The locations of the wells are presented on the most recsent survey in Attachment 1-3. The detailed boring logs for these wells are presented in Attachment 1-6. No extraction or injection wells are located within a one mile radius of the subject property.

1.7 Wind Rose

A wind rose for the Detroit City Airport is presented in Attachment 1-7. The airport is located approximately 11 miles east of the subject property.

1.8 Vegetation

The vegetation in the area of the facility is very sparse due to the high traffic volume and the amount of gravel and road material covering the surface.

1.9 Site History

This facility has been owned and operated by Detrex since 1950. Only halogenated solvents are sold and reclaimed at this facility.

One spill incident has been recorded at this facility. In March of 1990, a railroad tank car was leaking still residue (oily substance). Approximately 10 gallons of fluid, which contained trichloroethylene (approximately 6 pounds), was lost. Ten yards of soil was excavated in the area. The MDNR was on-site to oversee the remediation and has determined that the remediation was completed in an effective manner.

1.10 Past Permits

This facility is licensed under Act 64 for the ~~sale, distribution, and reclaiming~~ reclamation of halogenated solvents. Air and water discharge permits have been obtained from the City of Detroit and Wayne County for this site.

2. NATURE AND EXTENT OF CONTAMINATION

This section will detail information on the existing conditions and extent of contamination at this site.

2.1 Source Areas of Contamination

The Detrex facility has numerous storage containers for new and spent solvents. Attachment 1-5 contains a site map showing the location of ~~all~~ storage containers, sizes, and contents. These locations are ~~all~~ possible locations for potential releases.

2.2 Existing Contamination

To date, 13 soil borings and two monitoring wells have been installed around the site. From the existing information gathered from the initial investigation, it appears that contamination does exist at this site. The contamination at this site is halogenated volatiles that are present in the soil. The work completed to date indicates that limited contamination exists within the fill material extending to the property boundaries. The contaminants appear to decrease with depth. The contaminants appear to be limited to depths less than ~~do not extend below a depth of~~ approximately 20.0 feet. Groundwater samples were collected and analyzed from the two monitoring wells. The samples did not indicate the presence of any contaminants in the groundwater.

The contaminants at this site have the potential to migrate through the backfill along the utility lines., ~~as t~~ These are generally backfilled with sand or fill material that is more porous than the native soils throughout the facility. The fill material over the site and the fill material around the utilities is underlain by a clay that has a low permeability. The contaminants are not expected to leach into clay at an elevated rate as in the fill or sand. The groundwater at this site is at a depth of approximately 97.0 feet below the ground surface. This groundwater has not been affected, as indicated by the laboratory analysis.

The potential impact on human health and the environment is low due to the levels of contamination and the location of the site.

3. IMPLEMENTATION OF INTERIM MEASURES

This section will document interim measures which have been taken or will be taken in the future.

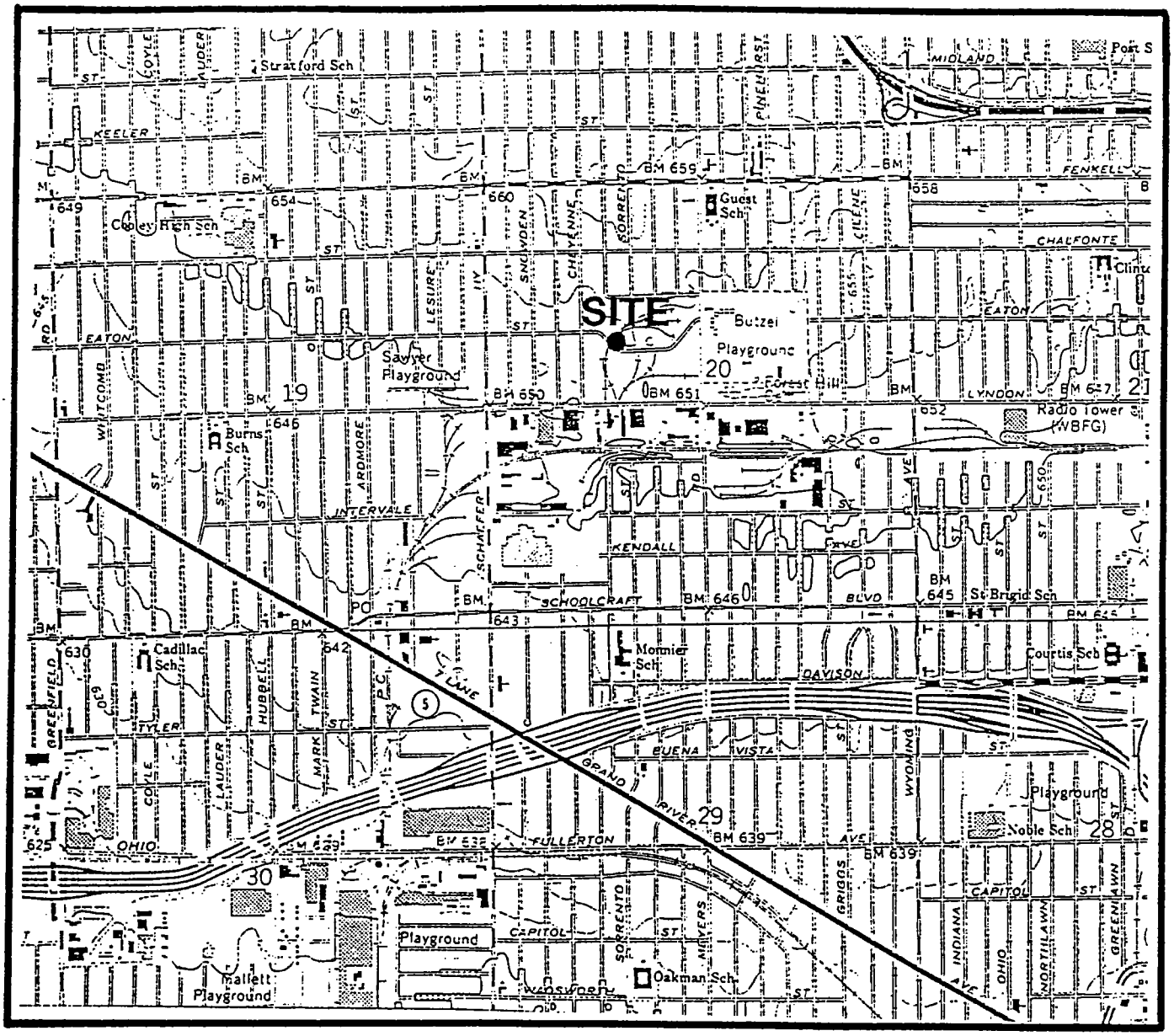
3.1 Interim Measures

The interim measures that have taken place at this site to date are the installation of secondary containment around the tanks and transfer locations. The runoff water is collected and tested prior to the disposal into the sewer system.

Additional interim measures will be implemented after further studies and testing.

ATTACHMENT 1-1

USGS TOPOGRAPHY MAP



ROYAL OAK QUADRANGLE
MICHIGAN
7.5 MINUTE SERIES (TOPOGRAPHIC)

1968
PHOTOREVISED 1981
DMA 4368 I NW—SERIES V862

QUADRANGLE LOCATION

NORTH

SCALE 1:24 000

1 MILE
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETER

CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Date 5-23-94 Drawn By LAK Scale AS SHOWN Job PE21229	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc.	SITE LOCATION DIAGRAM DETREX CORPORATION 12886 EATON AVENUE DETROIT, MICHIGAN

Figure No. 1

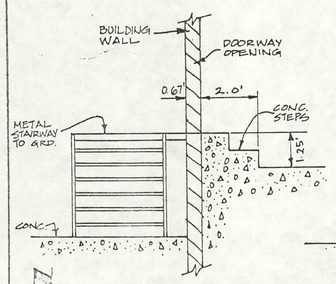
ATTACHMENT 1-2

SITE TOPOGRAPHY MAP

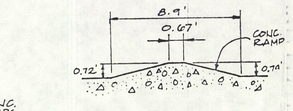
ATTACHMENT 1-3

LEGAL SURVEY MAP WITH LEGAL DESCRIPTION

MULTI-COLOR 100 7-66 86167



SECTION B-B
NTS



SECTION C-C
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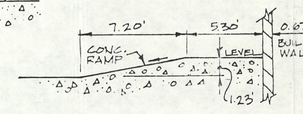

SECTION D-D
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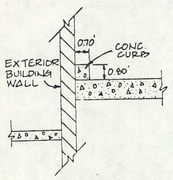
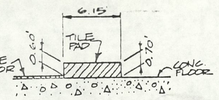
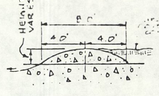


SECTION G-G
NTS



SECTION E-E
NTS



SECTION F-F
NTS

VICINITY MAP

SCALE: 1" = 200'

LEGAL DESCRIPTION

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DATE: July 11, 1985

WARNER, CANTRELL & PADMOS, INC.
BY: Donald A. Beaupied
DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512

REVISIONS
JULY 26, 1985 - ADD TEST BORING & WELL LOCATION INFO.
APRIL 10, 1989 - UPDATED FOR TRUCK WELL & PAVEMENT CONSTRUCTION
APRIL 24, 1990 - ADDED CROSS SECTIONS P-B, C-C, D-D, E-E & F-F & NON-TANK AREA WALLS A-23-91
FOR MORE REVISIONS SEE BOTTOM LEFT
DATE: July 11, 1985

PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N.½ OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T.1S., R.11E., CITY OF DETROIT, WAYNE CO., MICH. (L.60, P.62)

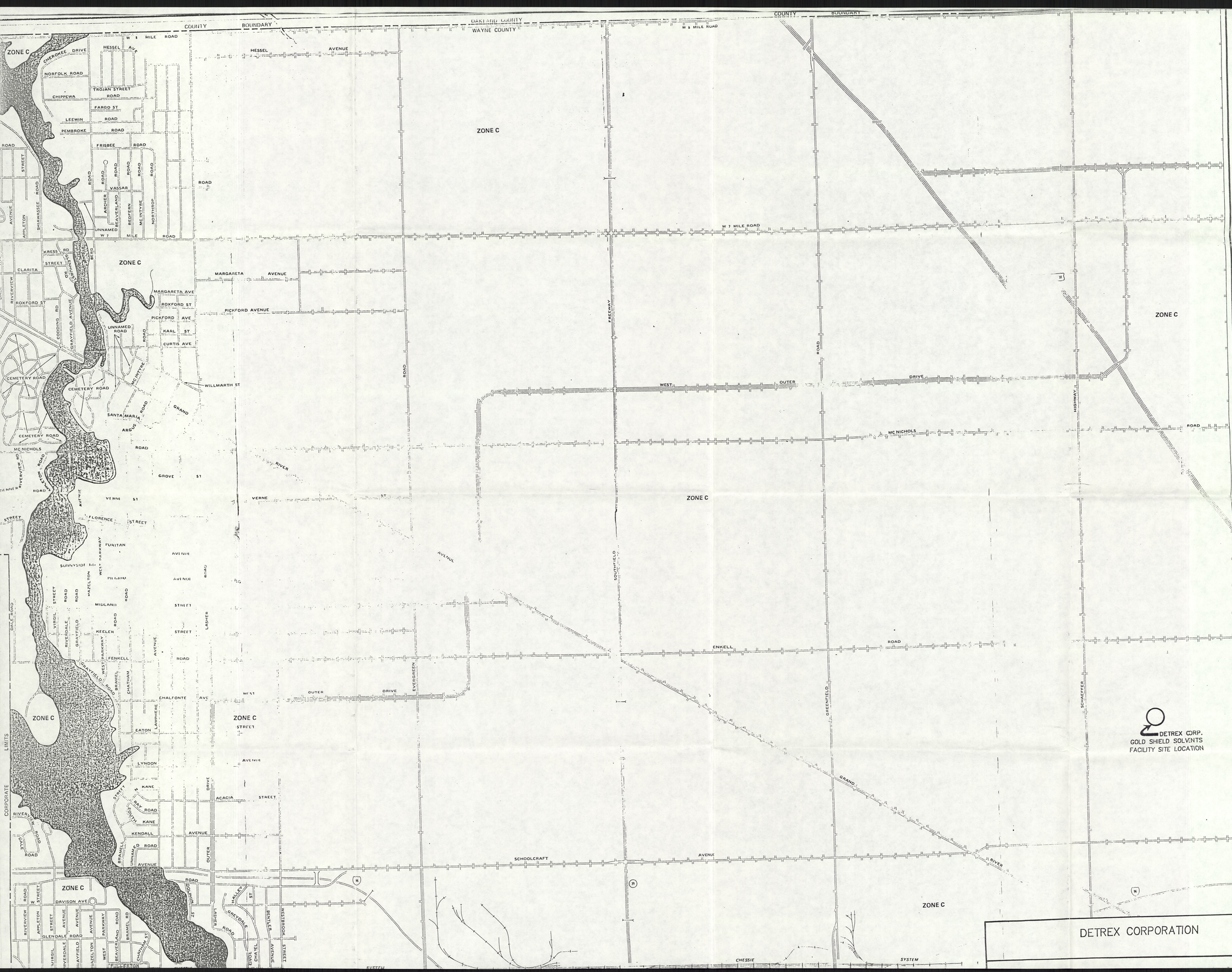
SCALE: 1" = 20' | DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
20700 ORCHARD LAKE RD.
FARMINGTON HILLS, MI. 48336
313-478-9494

JOB NO. 900408
PLAN FILE
N.B. 614
SHEET 1 OF 1

ATTACHMENT 1-4

FLOOD INSURANCE RATE MAP



500-Year Flood Boundary

100-Year Flood Boundary

Zone Designations* With Date of Identification e.g., 7/2/74

ZONE B

100-Year Flood Boundary

ZONE B

500-Year Flood Boundary

513

Base Flood Elevation Line With Elevation In Feet**

(EL 987)

Base Flood Elevation In Feet Where Uniform Within Zone**

RM7×

Elevation Reference Mark

×M1.5

River Mile

**Referenced to the National Geodetic Vertical Datum of 1929

*EXPLANATION OF ZONE DESIGNATIONS

ZONE	EXPLANATION
A	Areas of 100-year flood; base flood elevations and flood hazard factors not determined.
AO	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; average depths of inundation are shown, but no flood hazard factors are determined.
AH	Areas of 100-year shallow flooding where depths are between one (1) and three (3) feet; base flood elevations are shown, but no flood hazard factors are determined.
A1-A30	Areas of 100-year flood; base flood elevations and flood hazard factors determined.
A99	Areas of 100-year flood to be protected by flood protection system under construction; base flood elevations and flood hazard factors not determined.
B	Areas between limits of the 100-year flood and 500-year flood; or certain areas subject to 100-year flooding with average depths less than one (1) foot or where the contributing drainage area is less than one square mile; or areas protected by levees from the base flood. (Medium shading)
C	Areas of minimal flooding. (No shading)
D	Areas of undetermined, but possible, flood hazards.
V	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors not determined.
V1-V30	Areas of 100-year coastal flood with velocity (wave action); base flood elevations and flood hazard factors determined.

NOTES TO USER

Certain areas not in the special flood hazard areas (zones A and V) may be protected by flood control structures.

This map is for flood insurance purposes only; it does not necessarily show all areas subject to flooding in the community or all planimetric features outside special flood hazard areas.

For adjoining map panels, see separately printed Index To Map Panels.

INITIAL IDENTIFICATION:
JULY 26, 1974

FLOOD HAZARD BOUNDARY MAP REVISIONS:
FEBRUARY 7, 1975

FLOOD INSURANCE RATE MAP EFFECTIVE:
JULY 2, 1981

FLOOD INSURANCE RATE MAP REVISIONS.

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE date shown on this map to determine when actuarial rates apply to structures in the zones where elevations or depths have been established.

To determine if flood insurance is available in this community, contact your insurance agent, or call the National Flood Insurance Program, at (800) 638-6620.

APPROXIMATE SCALE
1000 0 1000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM
FLOOD INSURANCE RATE MAP

CITY OF
DETROIT,
MICHIGAN
WAYNE COUNTY

PANEL 5 OF 45
(SEE MAP INDEX FOR PANELS NOT PRINTED)

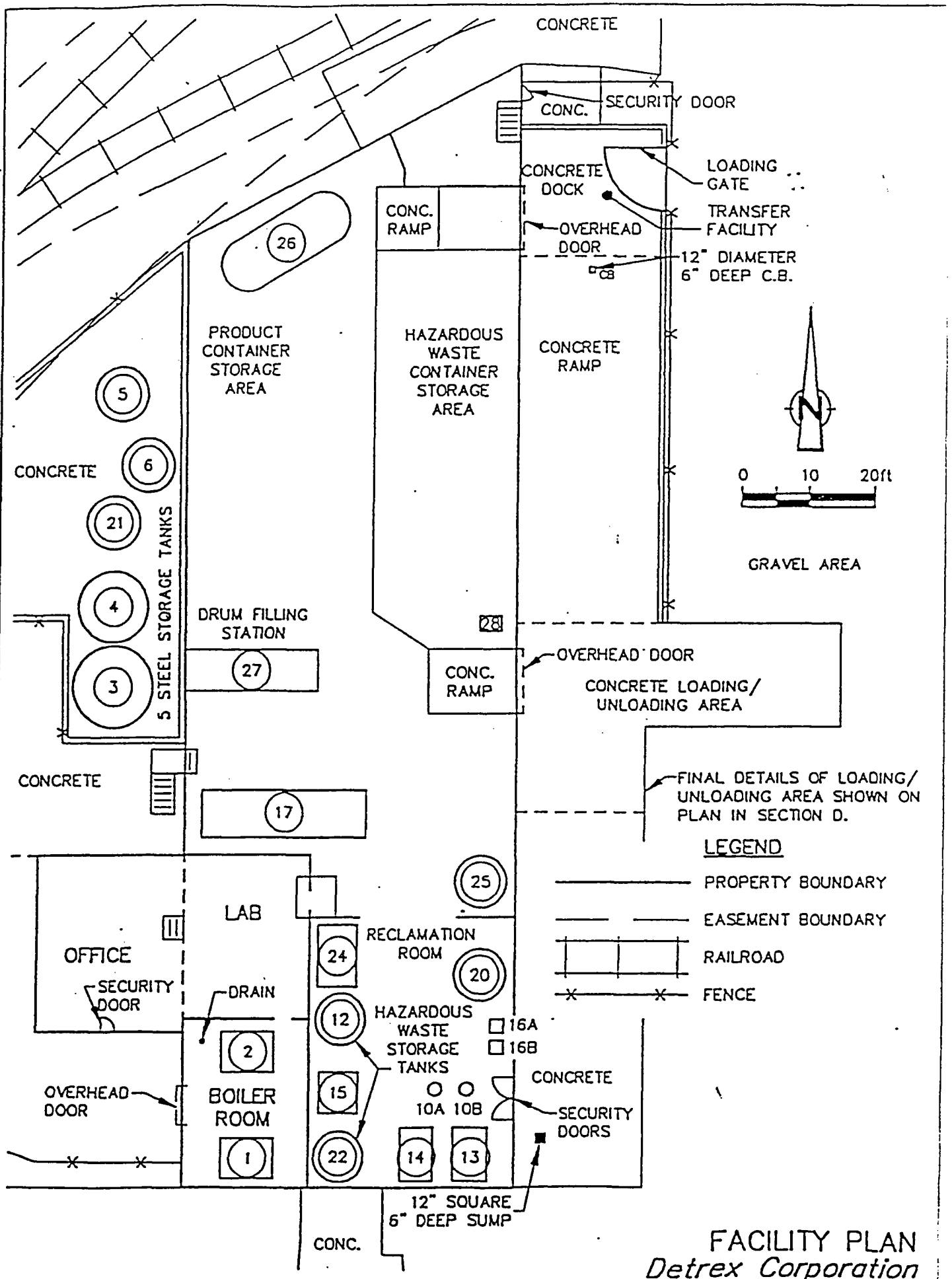
COMMUNITY-PANEL NUMBER
260222 0005 B

EFFECTIVE DATE:
JULY 2, 1981

DETREX CORPORATION

ATTACHMENT 1-5

TANK AND PROCESS EQUIPMENT ~~TREATMENT~~ LOCATIONS



FACILITY PLAN

Detrex Corporation

Eaton Avenue Facility, Detroit

Date: 09/03/91
Revision: 91-2

LIST OF PROCESS EQUIPMENT

I.D. No.	*Equipment Name*	*Description*
1.	Generator	Clayton Model E-100 Steam Generator. Unit burns natural gas to produce steam at the rate of 3450 lbs./hr. at 100 psig.
2.	Air Compressor	
3.	20,000 gal. Product Tank	20,000 gallon carbon steel storage tank for storage of 1,1,1 Trichloroethane.
4.	10,000 gal. Product Tank	10,000 gallon carbon steel storage tank for storage of Trichloroethylene
5.	4,500 gal. Product Tank	4,500 gallon carbon steel storage tank for storage of Perchloroethylene.
6.	4,500 gal. Product Tank	4,500 gallon carbon steel storage tank for storage of Trichloroethylene
10 A/B	2 - 600 gal. Receiver Tanks	Used for receiving product from Detrex stills. (Operated at atm. pressure).
12.	2,300 gal. Hazardous Waste tank storage tank	2,300 gallon carbon steel storage tank used for storage of F001 or F002 material prior to processing
13.	350 gal. Detrex Still	Detrex Model S-350. Used for recovering chlorinated solvents from spent solvents from degreasing operations (F001 material) via distillation. This unit can process approximately 2,000 gallons/day.
14.	350 gal. Detrex Still	Detrex Model S-600. Used for recovering chlorinated solvents from spent solvents from degreasing operations (F001 material) via distillation. This unit can process approximately 2,000 gallons/day.
15.	DCI Still	DCI Model Dyna-1-100 Solvent Recovery Still. Used to recover chlorinated solvents from still bottoms from recovery of same (F002 material) via live steam injection. This unit can process approximately 100 gallons per hour.
16 A/B	Drying Columns	Detrex Dual Column Drier. Used to remove water from recovered product (solvent) via adsorption.

Date: 09/03/91
Revision: 91-2

LIST OF PROCESS EQUIPMENT

I.D. No.	*Equipment Name*	*Description*
17.	5,000 gal. Still Bottom Tank	5,000 gallon carbon steel storage tank. Used for temporary accumulation of still bottoms from recovery of chlorinated solvents (F002 material).
20.	2,500 gal. Holding Tank	2,500 gallon 316 stainless steel storage tank used for storage of reclaimed solvent.
21.	4,500 gal. 1,1,1 Trichloroethane	4,500 gallon carbon steel storage tank for storage of 1,1,1 Trichloroethane.
22.	4,500 gal. Hazardous Waste Storage Tank	4,500 gallon carbon steel storage tank used for temporary storage of F001 or F002 material prior to being processed by Detrex stills.
24.	DCI Still	DCI Model Dyna-1-500 Solvent Recovery Still. Used to recover chlorinated solvents from still bottoms from recovery of same (F002 material) via live steam injection. This unit can process approximately 500 gallons per hour.
25.	3,000 gal. Holding Tank	3,000 gallon 316 stainless steel storage tank used for storage of reclaimed solvent.
26	SVRM - Carbon Absorption Unit	
27.	Drum Filling Station	Product Drumming Station. Used for filling 55-gallon drums with product. Unit can fill approximately 30 drums per hour and is operated as necessary.
28.	Product Blending Vessel	550 gallon carbon steel vessel utilized for product blending.

ATTACHMENT 1-6

BORING LOGS AND WELL LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-08)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH7-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 8, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
2.5	FILL, medium grained, loose, brown, moist						
5.0	CL-CLAY, some sand, fine grained, stiff, gray, moist	-5.0					
	CL-CLAY, trace gravel, stiff, gray, moist	-6.0					
7.5			10" ø BOREHOLE				
10.0							
12.5	- same, very stiff		CUTTINGS				
15.0							
17.5							
20.0	- same, with trace sand			1SS		15	0
22.5							
25.0	END OF HOLE @ 25.0 FT. BGS	-25.0		2SS		17	0
27.5	NOTES: 1. Water not encountered.						
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-09)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH8A-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
	FILL, some sand, trace gravel, medium grained, loose, brown, moist						
		-2.0					
2.5	Concrete						
		-4.0 (-1.0)	▽ 6" ø BOREHOLE; CUTTINGS				
	SP-SAND, trace gravel, medium to coarse grained, loose, gray, wet						
5.0				1SS		7	0
7.5		-7.5					
	CL-CLAY, trace gravel, trace sand, fine grained, firm, gray, wet			2SS		3	0
10.0	END OF HOLE @ 10.0 FT. BGS	-10.0					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ( ) WATER FOUND ▽ STABILIZED WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-10)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH9-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
2.5	FILL, some sand, trace brick, trace gravel, medium grained, loose, black stained, moist		10" ø BOREHOLE	1SS		15	6
5.0	SC-SAND, some clay, medium grained, soft, brown, moist	-5.0	CUTTINGS	2SS		4	6
7.5	CL-CLAY, trace silt, trace gravel, fine grained	-6.0		3SS		7	0
10.0	CL-CLAY, some silt, trace sand, trace gravel, fine grained, stiff, brown, moist	-8.0		4SS		26	0
12.5	END OF HOLE @ 10.0 FT. BGS	-10.0					
15.0	NOTES: 1. Water not encountered.						
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-11)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH10-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
0	FILL, some sand, medium grained, loose, tan, black stained, moist			1SS		16	0
2.5	FILL, some sand, trace gravel, medium grained, medium dense, brown, moist	-2.0	10" ø BOREHOLE	2SS		32	0
5.0	CL-CLAY, some silt, trace sand, fine grained, firm, gray brown mottled, moist	-4.0	CUTTINGS	3SS		15	0
7.5				4SS		26	0
10.0	CL-CLAY, some silt, trace sand, trace gravel, fine grained, stiff, brown, moist	-8.0		5SS		33	0
12.5	END OF HOLE @ 10.0 FT. BGS	-10.0					
15.0	NOTES: 1. Water not encountered.						
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91
(Page 1 of 4)
PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991
CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY
LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
2.5	FILL, medium grained, loose, brown, moist, black stained						
	SC-SAND, some clay, fine grained, loose, moist	-3.0					
5.0	CL-CLAY, trace silt, trace gravel, fine grained, stiff, brown, moist	-4.0					
7.5			4"ø CASING				
10.0			CEMENT/ BENTONITE GROUT				
12.5							
15.0	CL-CLAY, trace gravel, fine grained, stiff, gray, moist	-13.5	10"ø BOREHOLE				
17.5			CEMENT/ BENTONITE GROUT				
20.0							
22.5	- same, trace sand		2"ø WELL PIPE				
25.0							
27.5			3 7/8"ø MUD ROTARY				
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91 (Page 2 of 4)

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
35.0	CL-CLAY, trace gravel, fine grained, stiff, gray, moist						
37.5							
40.0							
42.5			2" ø WELL PIPE				
45.0							
47.5							
50.0			CEMENT/ BENTONITE GROUT				
52.5							
55.0			3 7/8" ø MUD ROTARY				
57.5							
60.0							
62.5							
65.0							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91 (Page 3 of 4)

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNU (ppm)
67.5							
70.0	– same, trace sand						
72.5							
75.0			3 7/8"ø MUD ROTARY				
77.5			CEMENT/ BENTONITE GROUT				
80.0							
82.5			2"ø WELL PIPE				
85.0							
87.5							
90.0	– same, soft			1SS		8	
92.5	– same, trace sand, stiff		BENTONITE PELLET SEAL	2SS		17	
95.0	– same, trace sand, firm			3SS		14	
	– same, trace sand, stiff						
97.5	SM–SAND, some gravel, some clay, some silt, medium to coarse grained, dense, gray, wet	-97.0	SAND PACK / WELL SCREEN	4SS		49	
				5SS		86	

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991
CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY
LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
100.0	SP-SAND, trace gravel, trace silt, medium to coarse grained, dense, gray, wet	-100.0	3 7/8"ϕ MUD ROTARY; SAND PACK; WELL SCREEN; 2"ϕ WELL PIPE	6SS	X	65	
102.5	SW-SAND, fine grained, very dense; gray, wet	-102.0		7SS	X	114	
	- some, except fine to medium, dense.						
105.0	- some, except fine, very dense			8SS	X	87	
	SP-SAND, trace gravel, fine, medium to coarse grained, dense, gray, wet	-106.0		9SS	X	88	
107.5	END OF HOLE @ 107.5 FT. BGS	-107.5					
110.0							
112.5							
115.0							
117.5							
120.0							
122.5							
125.0							
127.5							
130.0							

SCREEN DETAILS:
Screened Interval:
97.5 to 107.5' BGS
Length -10.0'
Diameter -2.0"
Slot # 6
Material -Stainless Steel
Sand pack interval:
93.5 to 107.5' BGS
Material -Silica Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

ATTACHMENT 1-7

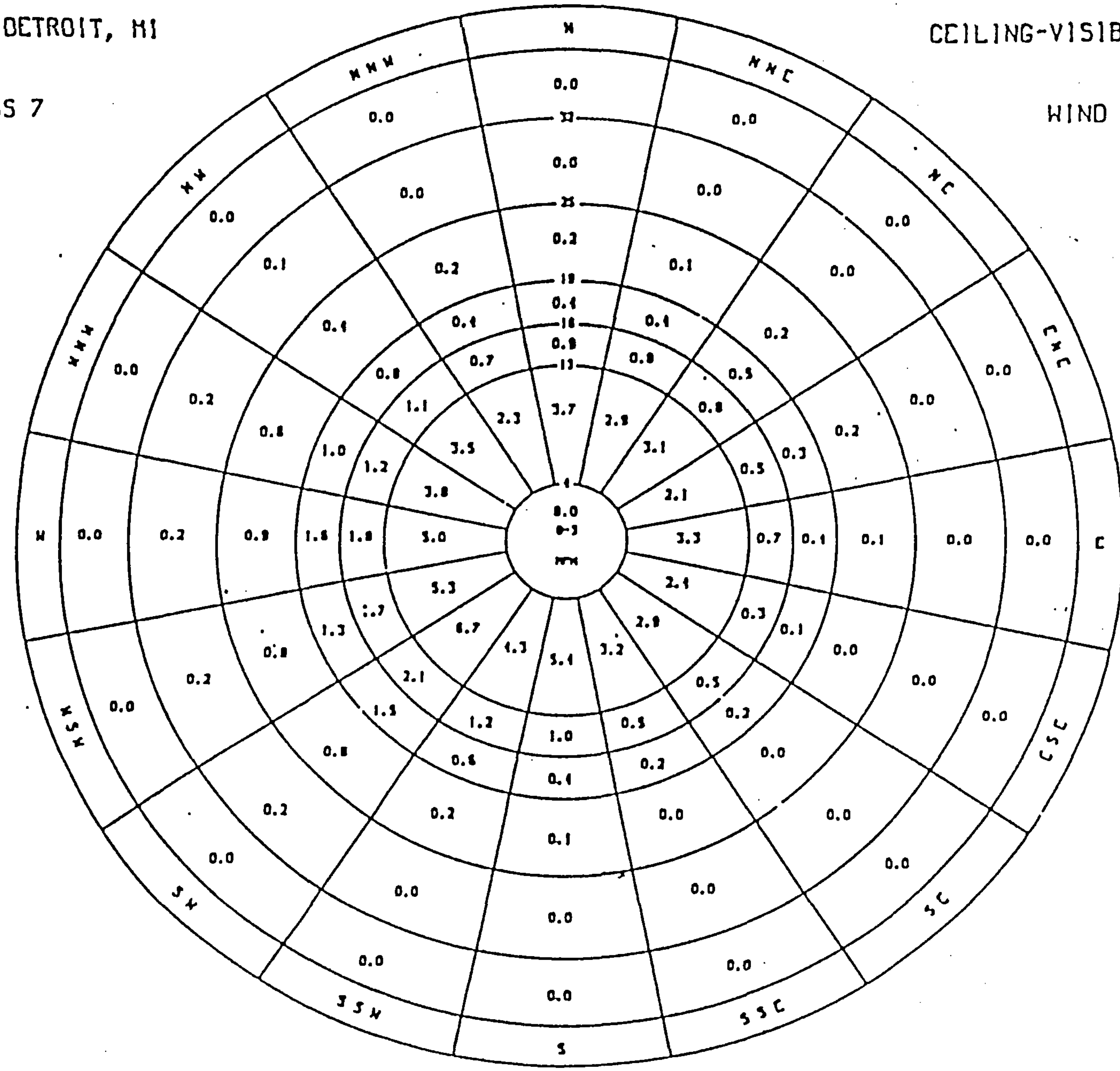
WIND ROSE

DTW DETROIT, MI

CLASS 7

CEILING-VISIBILITY

WIND GRAPH



WIND ROSE

Detrex Corporation

Eaton Avenue Facility, Detroit

SECTION 2

PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

DETREX CORPORATION
MID 091 605 972

TASK 11 - ATTACHMENT 1

TABLE OF CONTENTS

SECTION 2

PRE-INVESTIGATION EVALUATION OF CORRECTIVE MEASURES TECHNOLOGIES

TASK II - ATTACHMENT I

1. BACKGROUND

Based on the results of previous studies conducted on the Eaton Avenue site, the following conclusions can be drawn:

- The site geology consists of approximately 3 to 4 feet of sand, underlain by a thick layer of clay.
- The sand is composed of an upper unit of fill and a lower unit of native material.
- No groundwater or perched water (with the exception of one boring) is present within approximately 90 feet of the surface.
- The contamination at the site consists of low to moderate levels of volatile organic compounds (VOCs) present in the fill/native sand and in the upper portion of the clay.

2. CORRECTIVE MEASURES TECHNOLOGIES

2.1 Introduction

Potential corrective measures technologies are discussed in the following sections. Each section describes the technology and presents a discussion of the field data that needs to be collected during the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to facilitate the evaluation of that particular technology. Any of the following remedial technologies may be used singularly or in combination.

As indicated in USEPAs Conditional Approval to the RFI Workplan, Detrex shall use the cleanup criteria established pursuant to Michigan's Environmental Response Act, 1982 P.A. 307 as amended (Act 307), in developing and implementing its corrective action program at the facility. The cleanup criteria established under Act 307 represent Michigan's cleanup policy which is more stringent than Federal standards. Three different cleanup criteria exist under Act 307: Types A, B, and C. The Type A cleanup criteria is based on native background for naturally occurring compounds and nondetect (based on

MDNR approved method detection limits) for other compounds. The Type B cleanup criteria is based on generic risk assumptions. The Type C cleanup criteria is based on site-specific risk assumptions and long-term institutional controls. The particular cleanup criteria that is chosen for the Eaton Facility will depend on the data collected by completing the RFI. It will be determined whether or not Type A, Type B, Type C, or any combination of these cleanup criteria are most suitable for this specific site.

2.2 Excavation/Landfilling

This option involves the physical removal and landfilling of all or portions of the contaminated soil.

The excavation may continue until the contaminated soil (i.e., until non-detect concentrations are achieved) is removed, or until closure under Michigan Act 307 Type A, Type B or Type C Criteria is feasible. To evaluate these options, the following data needs to be collected:

- Delineation of the horizontal and vertical extent of VOCs to both non-detect concentrations and Type B Closure Criteria acceptable levels.
- Determination of the presence and concentration of VOCs under existing structures.
- Concentration of VOCs by Toxicity Characteristic Leachate Procedure analysis to determine their leachability (thus the potential for Type B or Type C Closure) and waste characterization properties (i.e., hazardous vs. non-hazardous).

2.3 Soil Vapor Extraction

This option is an in-site remediation technique that involves extracting volatile organic vapors for contaminated soil. Target cleanup levels can be based on non detect or Type B Criteria. To evaluate this option, the following data needs to be collected:

- Maximum and average concentration of VOCs
- Particle size distribution (particularly clay content)
- Soil moisture content
- Permeability

- Soil organic carbon content

2.4 Low Temperature Thermal Desorption

Low temperature thermal desorption processes are used to separate VOCs from soil via evaporation. They utilize air, heat, mechanical agitation, or a combination of the processes to transfer the VOCs from the soil into a gas steam. The gas steam is then treated further or released into the atmosphere, while the soil can be reused as backfill at the site or elsewhere. The data which needs to be collected to evaluate this option is:

- Soil moisture content
- Maximum and average concentration of contaminants
- Total volume of soil requiring treatment
- The presence of contaminants beneath existing structures
- Soil organic carbon content

SECTION 3

PROJECT MANAGEMENT PLAN

DETREX CORPORATION
MID 091 605 972

TASK IIIA - ATTACHMENT I

TABLE OF CONTENTS

PAGE NO.

SECTION 3

PROJECT MANAGEMENT PLAN

TASK 111A - ATTACHMENT I

1. INTRODUCTION

The Project Management Plan is being written as part of the Federal Hazardous Waste Permit Conditions (Detrex Corporation, Solvents and Environmental Services Division, Detroit Michigan, MID 091 605 972). Specifically, this plan addresses the permit condition outlined under Task III-Paragraph A. of Attachment I to the permit. The investigation is being undertaken by Soil and Materials Engineers, Inc. , of Plymouth, Michigan, for Detrex Corporation.

The technical approach and Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Workplan documents for this study were developed based on RFI (Attachment I) documents supplied along with the Permit. The components of the investigation have been developed specifically for this site; the Workplan documents reflect activities and plans that are site-specific.

1.1 Purpose

The purpose of the facility investigation is to evaluate the nature, as well as the horizontal and vertical extent of the release(s) of hazardous constituents; to evaluate the facility characteristics; and to eventually identify, develop, and implement warranted corrective measures to protect human health and the environment.

1.2 Scope of Work

The scope of the facility investigation includes the gathering of specific information necessary to evaluate the characteristics, extent and nature of hazardous constituents in the soil, as well as to evaluate feasible corrective action measures. The Project Management Plan will provide discussion of the technical approach to the study, present a proposed schedule, and present the overall management approach to the facility investigation. The Project Management Plan is designed to be a flexible document with

work elements that can be expanded, reduced, or eliminated based on the data gathered during the investigation.

1.3 Previous Investigation

Previous investigations have been undertaken at the Detrex - Eaton Avenue facility and are the basis for the proposed additional investigations described in this plan. Two specific data collection activities have been completed to date:

1. One monitoring well and two borings were completed by Conestoga-Rovers & Associates Limited in 1989.
2. An additional monitoring well and 10 borings were completed by Conestoga-Rovers & Associates Limited in 1991.

The previous investigations determined that Volatile Organic Compounds (VOCs) are present in the fill and upper portion of the natural clays that exist at the site. The suspected source of contamination appears to be a result of runoff that occurred historically at the site before preventative containment practices were required for SWMUs. There was no groundwater encountered until approximately 97 feet below the surface. Since soil contamination appears to be limited to shallow depths and previous sampling of the groundwater did not indicate VOC contamination, no hydrogeologic investigation will be performed on the site. The following section describes the technical approach that will be taken to further assess the nature and extent of VOC contaminants in the soil for the site.

2. TECHNICAL APPROACH

The recent investigations at the Detrex - Eaton Avenue facility indicate the need for additional investigations to reach the ultimate implementation of appropriate corrective actions. Two regulatory issues are involved in the study:

- Surface water runoff
- Soil contamination

2.1 Concentrated Source Assessment

This task includes the investigation of historical potential contaminant sources and how surface drainage (runoff) has distributed VOC contaminants. Specific work will include the following activities:

- Performing historical research and interviewing on past operations and areas of overspill;
- Compilation of existing data to determine any trends or possible hotspots of contamination that can be correlated to current runoff patterns.

2.2 Soil Contamination

From previous investigations, the near surface lithology consists of a medium-grained, loose, moist fill to a depth of 3.0 feet, underlain by a foot of sand. Below this layer, to a depth of 13.5 feet, appears to be silty clay. Below this layer, to a depth of 97.0 feet, appears to be stiff, gray clay which is indicative of this region.

The contamination appears to be confined to the top three soil types, with a possible few feet of contamination in the gray clay layer. VOCs have been detected in previous borings performed on the site. It has been determined that further soil borings will be necessary to determine the vertical and horizontal extents of contamination. Since few of the previous sample analyses were able to be validated, some duplication of work will be necessary. It is the intent of the investigation to determine extents and patterns of contamination in each of the three or four soil types found to be affected at the site. It is further expected that geotechnical characteristics such as permeability, porosity, organic content, and moisture content of each soil type will be determined in order to determine the feasibility of different remedial technologies.

2.3 Potential Migration Pathways

Potential migration pathways, i.e. soil and air, will be evaluated during the RFI. At this time, groundwater is not believed to constitute migration pathway at the facility, because groundwater is not encountered on the site until approximately 97 feet below the surface. Additionally, soil contamination appears to be limited to shallow depths. Surface water bodies are not believed to constitute a potential migration pathway because surface water bodies are not located within a quarter mile radius of the facility.

Soils will be evaluated as a potential migration pathway by defining the horizontal and vertical extents of contamination within the vadose zone. Potential migration of contaminants within fill soils along utility corridors will also be evaluated by hand augering soil borings along the utility corridors. The number and location of these borings will be determined when the locations of the utility corridors have been confirmed in the field.

Air will be evaluated as a potential migration pathway. Several air monitoring stations are located at the facility. These stations will be periodically monitored during the course of the RFI. Ambient air within work zones will also be monitored with a PID during RFI field activities.

3. PROJECT MANAGEMENT

The RFI is being conducted for Detrex Corporation by Soil and Materials Engineers, Inc. of Plymouth, Michigan, with the approval and oversight by the Michigan Department of Natural Resources (MDNR) and the United States Environmental Protection Agency (U.S. EPA). Workplans, data collection plans, quality assurance plans, and reports will be based on the RFI (Attachment I) that was submitted with the Detrex permit.

The Project Manager will be directly responsible to Detrex Corporation and will maintain communication with the MDNR and U.S. EPA as necessary. Attachment 3-1 shows the Project Organizational Chart.

The Quality Assurance (QA) Manager is responsible for conducting staff training in QA procedures and requirements; internal, system, and performance audits; and for identifying and implementing corrective actions.

The Health and Safety Officer also is directly responsible to the Project Manager. The Health and Safety Officer has the responsibility to properly train the field crew and any subcontractors in appropriate health and safety techniques, including field instrument use, protective clothing use and decontamination procedures. The Health and Safety Officer will conduct field safety audits and oversee the field crew.

3.1 Project Organization

The investigation generally is divided into five categories as shown in Attachment 3-1; site investigations, health and safety, laboratory analysis, investigation analysis, and reporting. Site investigations include field activities such as research, test borin

stratigraphy characterization, and soil sampling. The field crew will consist of a Site Manager, Health and Safety Officer, Field Geologist, and Drill Rig Operator and Assistant, as required.

Laboratory analysis includes physical and chemical analysis. Physical soil analysis will be conducted by Soil and Materials Engineers, Inc. Chemical analysis will be conducted by Encotech which is an U.S. EPA approved laboratory. Encotech is located at 3985 Research Park Drive, Ann Arbor, Michigan 48108. The contact person for Encotech is Jim Kuehn and the phone number is (313)-761-1389.

Investigation analysis includes data reduction, validation, and evaluation. Procedures for these activities are provided in the Data Management Plan and Quality Assurance Project Plan (QAPjP).

4. SCHEDULE

The schedule to complete the Facility Investigation is presented as a time line, as provided in Attachment 3-2. The start date of the schedule is the date of receipt of approval of the revised RFI Workplan by the U.S. EPA. Upon approval of the workplan, the implementation of the Facility Investigation will begin within 30 days (also stated in the permit). The tasks oulined on Attachment 3-2 have an estimated completion date of 20 weeks.

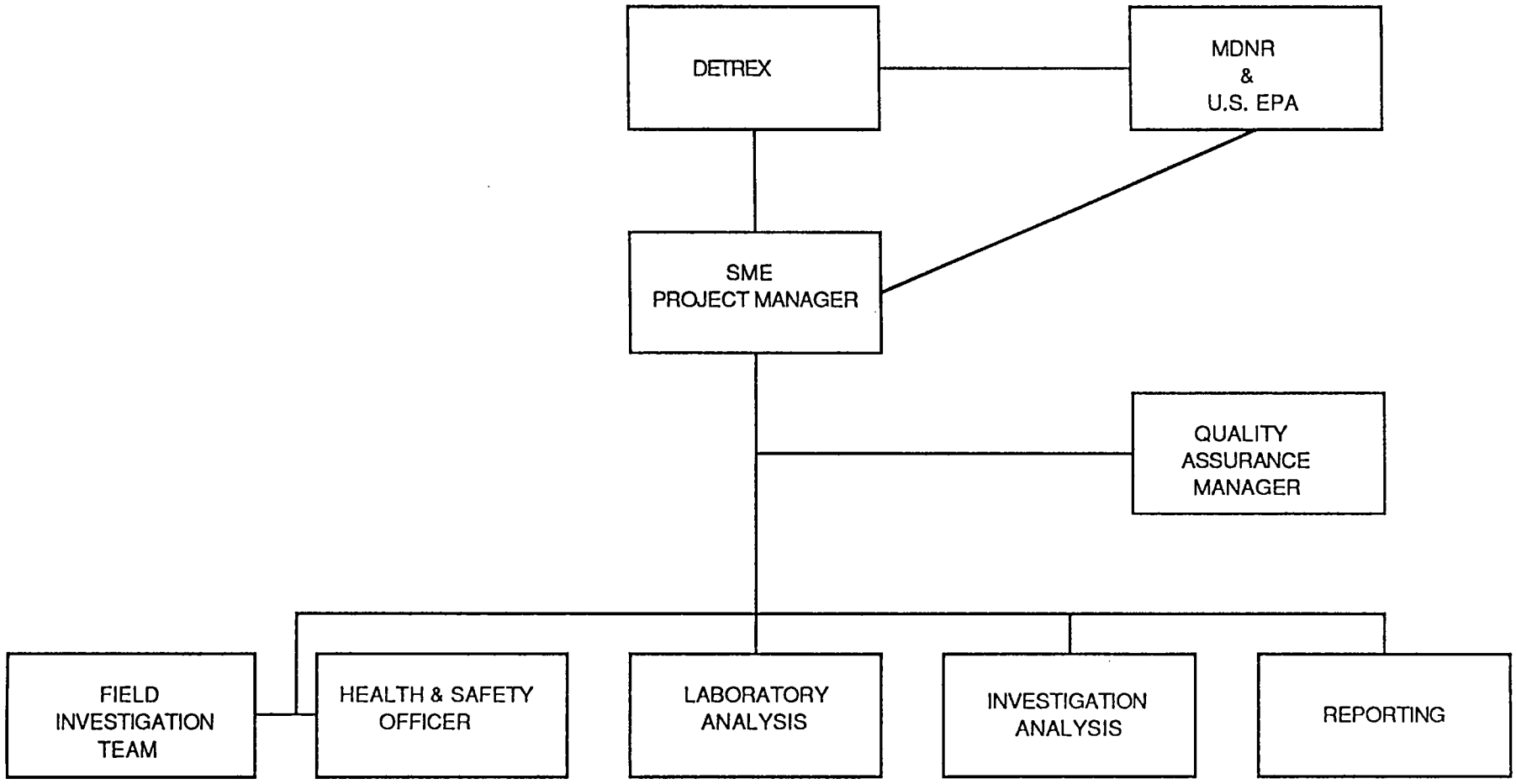
5. PROJECT PERSONNEL

Descriptions of SME project personnel qualifications and experience can be found in Attachment 3-3.

ATTACHMENT 3-1

PROJECT ORGANIZATIONAL CHART

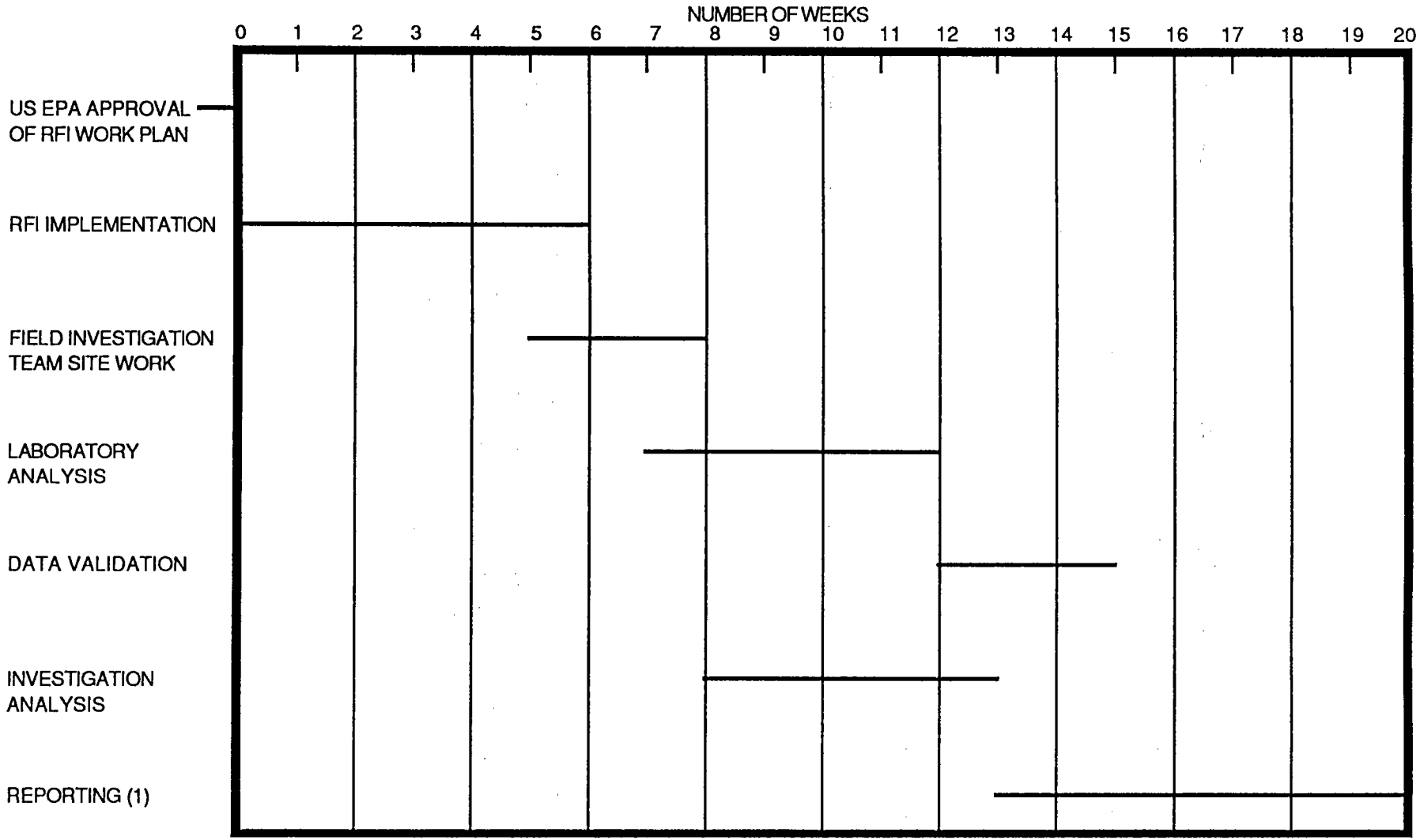
ORGANIZATION CHART
RCRA FACILITY INVESTIGATION
DETREX CORPORATION
EATON AVENUE FACILITY
DETROIT, MI



ATTACHMENT 3-2

PROJECT TIME LINE

PROJECT SCHEDULE
RCRA FACILITY INVESTIGATION
DETREX CORPORATION
EATON AVENUE FACILITY
DETROIT, MI



(1) If the extent of impacted media has not been fully determined after the first field investigation, additional rounds of sampling and analysis will be conducted, resulting in an extended submittal date for reporting.

ATTACHMENT 3-3

PROJECT PERSONNEL QUALIFICATIONS

RICHARD O. ANDERSON, PE

Director of Geoenvironmental Services

Senior Vice President and Principal-in-charge of geoenvironmental services group including environmental and geotechnical engineering services.

❑ Professional Qualifications:

- ❖ 22 years experience in environmental and geotechnical investigations and consulting.
- ❖ Specialist in large project management.
- ❖ Expert in the geotechnical aspects of environmental projects.
- ❖ Site contamination remediation management.

❑ Project Experience:

- ❖ Designed program for project in Royal Oak which permitted redevelopment of 3 acre site while remediation proceeded.
- ❖ Advised purchasers of many industrial facilities on environmental aspects of acquisition of contaminated facilities in Michigan.
- ❖ Directed Phase II investigations of contaminated manufacturing facilities involved in major property transfers.
- ❖ Internal consultation on numerous site remediations involving vapor extraction, bioremediation and geotechnical design aspects.

❑ Career History: SME - 20 years / Other firms - 2 years

❑ Education: B.S. & M.S./Civil Engineering, Michigan Technological University.
M.S./Business Administration, University of Michigan

❑ Registration: Professional Engineer - Michigan, Ohio, Indiana, West Virginia, Kentucky, Illinois, Colorado, Pennsylvania, Wisconsin, Minnesota

❑ Affiliations:
President - ASFE, 1988-89
President - ASCE S.E. Mich., 1989-90
Member - ASCE Committee on Curricula and Accreditation-1990-93
Member - ASCE Educational Activities Committee 1994
Member - Civil Engineering Advisory Committee-Michigan Tech
Member - Civil Engineering Advisory Committee-Lawrence Tech
Member - Committee on Education of Facilities Design
and Construction Professionals-National Research Council

CHERYL A. KEHRES-DIETRICH, CGWP

Senior Project Hydrogeologist

As Senior Hydrogeologist manages all types of environmental and hydrogeological contamination investigations and site remediations. Supervises other geologists and field staff, plans site activities and provides technical review.

❑ Professional Qualifications:

- ❖ Expert at contamination investigations and development of remediation alternatives for industrial facilities, landfill sites, UST sites, groundwater and soil studies.
- ❖ Experienced with environmental assessments, evaluation of findings, and design planning.
- ❖ Maintains contact with the Michigan Department of Natural Resources to monitor new environmental rules and regulations.
- ❖ Skilled in land application studies to determine the impact to groundwater aquifers from discharged treated wastewater.

❑ Project Experience:

- ❖ Project Hydrogeologist for investigation of a 5-acre site in southeastern Michigan contaminated with tetrachloroethylene and gasoline compounds. Included technical oversight for two remedial investigation phases including electromagnetic conductivity survey, soil borings, monitoring well installation, in-situ hydraulic conductivity and chemical testing. Data evaluation including managing the application of numerical groundwater model to evaluate the feasibility of various remedial action alternatives.
- ❖ Project Manager for remedial investigation of PCB and volatile organics at one of the ramps for the Zilwaukee Bridge. Investigation conducted to determine extent of soil and groundwater contamination, and remedial alternatives developed including provisions for isolating the site from the adjoining landfill.
- ❖ Project Manager and key client contact for contamination investigations at nine Consumers Power service center facilities across Michigan, including two historic coal gasification plants. Services included soil borings, monitoring well installation, field gas chromatograph testing, determination of contamination migration pathways, and development of remediation alternatives.
- ❖ Lead Hydrogeologist for contamination definition and tracer analysis for an innovative design to monitor an engineered landfill located adjacent to an old leaking landfill in the Village of Chelsea.

❑ **Career History:** SME (1986 - Present) Other Firms from 1982

❑ **Education:** B.S. & M.S. in Geology (Specialization in Hydrogeology) - MSU

❑ **Registration:** Certified Groundwater Professional (CGWP)

❑ **Affiliations:** NGWA-Association of Groundwater Scientists and Engineers

ROBERT J. NOWAKOWSKI

Project Consultant

Manages all types of environmental and hydrogeological contamination investigations and site remediations.

❑ Professional Qualifications:

- ❖ Experienced at contamination investigations and development of remedial alternatives.
- ❖ Responsible for project budgets and schedules, project management, providing technical input, coordination of SME resources, representation of clients with the regulatory agencies, and providing project QA/QC.
- ❖ Maintains working knowledge of current and proposed environmental rules and regulations.

❑ Project Experience:

- ❖ Performed over 150 Phase I Environmental Site Assessments including residential, commercial, and industrial facilities. Most notable was a Phase I ESA on an existing 200,000 square foot industrial complex in Warren, Michigan.
- ❖ Project manager for major automobile manufacturer. Developed and implemented a UST management plan that included the assessment of the UST system for compliance with UST regulations. Recommendations were given on updating or closing the UST system. All UST systems were investigated to determine the impact on soils and groundwater and for those systems which a release was discovered corrective action measures were undertaken.
- ❖ Project manager for investigation of a 14 acre site in southeast Michigan contaminated with trichloroethylene (TCE). Provided technical oversight of remedial investigation that included ground penetrating radar, soil borings, monitoring well installation, in-situ hydraulic conductivity, computer groundwater modeling and analytical testing.

❑ Career History: SME since 1994 - Other firms from 1988

❑ Education: B.S. in Geology, Wayne State University
Certificate in Hazardous Waste Management, Wayne State University

❑ Registration: Certified Professional Geologist (CPG)

❑ Affiliations: Engineering Society of Detroit
American Institute of Professional Geologist
National Groundwater Association
Michigan Association of Environmental Professionals

(4/94)

LAURA S. BADALAMENTI

Project Hydrogeologist

Manages a variety of environmental projects from investigation to remediation. Performs computer modeling and statistical evaluations of groundwater chemistry and flow.

❑ Professional Qualifications:

- ❖ Skilled at applying hydrogeologic and geochemical methods to define and help remedy contamination problems.
- ❖ Experienced with RCRA facility investigations and performing environmental site assessment subsurface investigations.
- ❖ Proficient in applying computer modeling capabilities to hydrogeologic data to aid in evaluation of remedial design alternatives.
- ❖ Knowledgeable in Act 307.

❑ Project Experience:

- ❖ Project hydrogeologist for hydrogeologic investigations of a large pharmaceutical manufacturing facility in Michigan, involving groundwater flow modeling for a risk assessment and remedial alternatives. Developed groundwater monitoring plan for the entire site.
- ❖ Project hydrogeologist for RCRA facility investigations of a large chemical manufacturing facility in Michigan. Oversaw field activities, evaluated findings and produced a report approved by the U.S. EPA.
- ❖ Lead hydrogeologist of a team of geologists and engineers working on site investigations, sampling and remediation plans for seven sites for a large industrial client in Michigan.
- ❖ Project hydrogeologist for a hydrogeologic investigation of an industrial waste dumping (Superfund) site. Performed a large-scale aquifer test on both confined and unconfined aquifers. Evaluated results and summarized into a report.

❑ Career History: SME since 1993 - Other firms from 1986.

❑ Education: B.S. in Geology, University of Michigan
M.S. in Geology (Geochemistry/Hydrogeology), Michigan State University

❑ Affiliations: NGWA - Association of Groundwater Scientists and Engineers

(8/93)

FRANK A. HENDERSON, PG

Director of Operations

Directs, manages, and supervises field and laboratory operations.

❑ Professional Qualifications:

- ❖ Directs all drilling performed by SME owned and operated rigs, as well as subcontracted drilling operations.
- ❖ Directs all field staff on quality control projects at corporate office. Coordinates regional office field and lab operations with Regional Office Managers. Often involves supervision of up to 50 field staff working on a variety of assignments.
- ❖ Responsible for all special field testing and instrumentation assignments, including pile load tests, vibration analysis, seismic investigations, pressuremeter testing, and piezometer installations.

❑ Project Experience:

- ❖ Coordinated and supervised SME drill crews during geotechnical investigations for new VA Hospital in Detroit and the Oakland Towne Square Building in Southfield.
- ❖ Supervised and directed annual drilling contracts with both the Corp. of Engineers, which included many marine borings and drilling off barges, and Conrail, which included drilling off of railroad flatcars.
- ❖ Supervised and coordinated the drilling and monitoring well installations for many environmental projects throughout Michigan. Clients include General Motors, Consumers Power, City of Saginaw, and the U.S. Postal Service.
- ❖ Directed quality control services for the Somerset Mall expansion and renovation of the existing mall without disruption to daily operations. Work included the construction of a new parking deck and Neiman Marcus Department Store.
- ❖ Managed field quality control for a number of additions and modifications to various Ford Motor Company facilities including the addition of the Ford Plant in Norfolk, VA., facilities at the Rouge complex, the new A.E.C. facility at the engineering center in Dearborn, and the addition to the Wixom Assembly Plant.

❑ Career History: SME since 1973 - Other firms from 1971.

❑ Education:
B.S./Geology, University of Michigan
M.S./Geology, Michigan Technological University
Continuing Education:
4th Annual Field Instrumentation of Soil and Rock course
Portland Cement Association, Floors on Grade
Michigan Supervisors Loss Control Program On-The-Job Safety

❑ Registration: Professional Geologist - Virginia

❑ Affiliations: Past President - Midwest Chapter, National Drilling Contractors

(4/93)

DANIEL O. ROESER

Project Geologist

Manages a variety of environmental projects from investigation to remediation. Responsible for hazardous waste RCRA compliance audits.

❑ Professional Qualifications:

- ❖ Skilled at groundwater investigations at industrial facilities, including management of costs and government regulations.
- ❖ Experienced with hazardous waste reduction and RCRA compliance audits.
- ❖ Knowledgeable in proposal preparation and work plans for evaluations of environmental conditions for real estate development projects.
- ❖ Produced program designs for soil and groundwater sampling.
- ❖ Skilled in evaluating past environmental assessment reports, on-site soil and groundwater sampling, identifying contaminated soil and groundwater, and recommending remedial action.

❑ Project Experience:

- ❖ Project Manager for Weiss Street Act 307 groundwater investigation and remediation project along the Saginaw River, involving full remediation and corrective action plan including the sediment problem.
- ❖ Project Manager for hydrogeological investigation of a former steel manufacturing company in California, including identification of a 55-acre chlorinated solvent contaminant plume.
- ❖ Project Manager for chemical manufacturing company UST removal in California. Investigated chlorinated solvent contaminant plume under the jurisdiction of the USEPA.
- ❖ Project Manager for numerous UST removals and groundwater investigations throughout southern California.
- ❖ Conducted hazardous waste audits at numerous jewelry and precious metals facilities.
- ❖ Assisted in the preparation of the "Gold, Silver, Platinum, and other Precious Metals Products and Recovery Waste Audit Study" for the California Department of Health Services.

❑ Career History: SME (1991 - Present)
SCS Engineers, California (1989-1991)
Lieutenant United States Navy (1985-1989)

❑ Education: B.A. in Geology, University of Rochester

❑ Affiliations: NGWA - Association of Groundwater Scientists and Engineers
Geological Society of America

(4/93)

SECTION 4

QUALITY ASSURANCE PROJECT PLAN (QAPjP)

DETREX - EATON AVENUE FACILITY
DETROIT, MICHIGAN
MID 091 605 972

U.S. EPA Region V Permit Writer _____

U.S. EPA Regional Quality Assurance Manager,
Monitoring and Quality Assurance Branch (MQAB) _____

SME Project Manager _____

SME Quality Assurance Manager _____

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ATTACHMENTS

SECTION 4

QUALITY ASSURANCE PROJECT PLAN (QAPjP)

1. INTRODUCTION

This Quality Assurance Project Plan (QAPjP) outlines the procedures Soil and Materials Engineers, Inc. will use to document monitoring procedures, sampling, field measurements, and sample analyses performed during the investigation.

The investigation will characterize the environmental setting, source, and extent of contamination. The QAPjP is designed to ensure information, data, and resulting decisions are technically sound, statistically valid, as well as properly documented. Quality Control (QC) is the mechanism through which QA achieves it's goals. A QC program defines the frequency and methods of checks, audits, and reviews necessary to identify problems and dictate corrective action, thus verifying product quality. This QAPjP outlines project data quality objectives, sampling procedures, analytical procedures, quality control checks, and corrective action procedures.

The overall objectives of the QAPjP are to ensure that:

- Procedures used in data acquisition, analysis, and management do not detract from the quality of the results.
- Scientific data generated will be of sufficient quality to stand up to scientific and legal scrutiny.
- Data will be gathered or developed in accordance with procedures appropriate for the intended use of the data.
- Data will be of known or acceptable precision, accuracy, representativeness, completeness, and comparability.

The objectives of quality assurance in the field are to ensure the validity and reliability of data acquired in the field by establishing an approved protocol for field procedures, properly documenting field activities, and training field team members in the use of equipment, protocol, and documentation.

The computation objective of the QA/QC Plan is to provide accurate presentation and evaluation of data.

The QA plan ensures that the laboratory provides an adequate quality control program and includes:

- Documentation of analytical methods to be used
- Documentation of equipment maintenance, testing, and calibration
- An adequate documentation record system
- Analysis of blank, duplicate, and spike samples

2. PROJECT DESCRIPTION

2.1 Introduction

The objective of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) is to determine the nature and extent of releases from hazardous waste(s) or hazardous constituents from regulated units, solid waste management units, and other source areas at the facility, and to gather the necessary data to support the corrective measures study.

The RFI will include a geotechnical and geological study of the facility area. The study will consist of soil borings, soil sampling, field analysis, laboratory analysis, data collection and analysis, and report generation.

2.2 Site Description

2.2.1 Location/Site

The Detrex facility is located at 12886 Eaton Avenue, in the City of Detroit, Michigan. The geographic location for this site is latitude 42° 23' 5'' and longitude 83° 10' 22''. A Site Location Map, indicating the location of the site as taken from the USGS Topographic Map, Royal Oak Quadrangle (1968, photo revised 1981), is presented in Attachment 4-1.

The site is somewhat wedge-shaped, measuring approximately 225.0 feet (north to south) on the east border, and tapering to a point (bordered by the railroad trade easement and Eaton Street) on the west (approximately 285.0 feet from the east property line). The total site area is approximately .9 acres.

2.2.2 Borders

The property is bordered to the north and west by a railroad easement; to the south by Eaton Avenue; and to the east by the Detroit Non-Ferrous Foundry, Inc. The zoning for the subject property and the property to the east is M-4, Intensive Industrial. The remaining areas are zoned R-1, Residential. The borders are depicted in Attachment 4-2.

2.2.3 Legal Boundaries

A copy of the most recent legal survey of the property owned by the Detrex Corporation, along with the legal description, is provided in Attachment 4-2. The survey map shows all buildings, utilities, paved areas, easements, and right-of-ways.

2.2.4 Important Physical Features

Attachment 4-2 indicates the important physical features of the site and their locations. The primary features are:

- 100' x 225' gravel area on the east side
- Loading/unloading area west of gravel area
- Main building west of loading/unloading area
- Above ground storage tanks (ASTs) west of north half of main building
- Office area south of ASTs
- One-story cinder block building on west end of property

The Detrex facility in Detroit is located on the flat, lacustrine plain. Very little topographic relief exists close to the facility. The area is interrupted only by major drainage channels and the marking of former beaches of glacial lakes.

The lands immediately surrounding the facility are at an approximate elevation of 656 feet above mean sea level (AMSL). The building floor, which forms the base of the secondary containment areas, is at an elevation of approximately 659 feet AMSL.

To the west of the facility, one railroad track moves in a northeast direction. One railroad spur enters the property directly north of the facility building. The elevation of the spur is approximately 656 feet AMSL. A topographic map is provided in Attachment 4-2.

2.2.5 Geology

2.2.5.1 Regional Geology

The main overburden material in Wayne County consists primarily of silts and clays, with the occasional glacial moraine deposits. This thick layer of lacustrine material mantles a bedrock of sandstones, limestones, shales, and dolomites. The downward sequence of the various bedrock formations beneath Wayne County includes the following:

Mississippian

- Coldwater Shale This unit exists at the northwest corner of Wayne County. The unit outcrops and subcrops in this area. The unit generally has low permeability.

Devonian

- Berea Sandstone This moderately fine-grained sandstone can be 100 feet in thickness in spots.
- Traverse Group This alternating sequence of shales and limestones outcrops in the central portions of Wayne County.
- Dundee Limestone This unit is a fossiliferous limestone with high permeability.
- Detroit River Group This group includes sandstones, limestones, and dolomite.

Silurian

- Bass Leland Group This group is composed of fine-grained dolomites.

Of the formations listed above, the following formations are reported to be used as a water supply source in Wayne County: Berea Sandstone, Traverse Group, Dundee Limestone, Detroit River Group, and the Sylvania Sandstone.

Several injection wells are located within Wayne County. Six Class I injection wells are used to inject industrial, nuclear, or municipal wastes beneath the deepest stratum containing an underground drinking water source. Eight injection wells, used for injecting fluids for solution mining, oil shale gasification, or geothermal energy recovery,

are also reported for Wayne County. Thirty wells are reported to be used for liquefied petroleum gas storage. No brine injection wells are recorded in Wayne County.

2.2.5.2 Local Geology

Based on boring logs generated during previous on-site studies [background soil and groundwater data collection program (07/91) and supplemental sampling activities (12/91)], the local geology can be described as follows:

A brown to gray medium-grained sand with gravel (fill) from the surface to approximately 3.5 to 4.5 feet is underlain by 1.0 foot of fine sand with some clay, which is underlain by blue/gray to approximately 97.0 feet below grade. A wet sand is encountered at 97.0 feet extending to approximately 111 feet, which is the termination depth of the deepest boring to date. Boring logs are included in Attachment 4-4.

2.2.5.3 Hydrogeology

Based on the available site specific information, it appears that a saturated zone was encountered in boring BH8A-91 at approximately 4 feet below grade at the upper surface of a relatively thin, medium to course grade zone. This boring also encountered concrete from approximately 2.0 to 4.0 feet below grade. Several other borings encountered a similar sand layer; however, it was not saturated. It is apparent that the water encountered in BH8A-91 is anomalous and does not represent an aquifer or an extensive zone of perched water.

The first true water boundary zone aquifer was encountered at a depth of approximately 97.0 feet. The aquifer is comprised of a fine to coarse gray sand with gravel, and extends to a minimum depth of 111 feet below grade (termination depth of BH-MW1-89). Because only two monitoring wells have been installed to date, no groundwater flow direction has been determined. The static water level in BH-MW1-89 is approximately 51.0 feet below grade. Boring logs are included in Attachment 4-4.

2.3 Site Background

2.3.1 History

The Eaton Avenue facility has been owned and operated by Detrex since 1950. The Eaton Avenue facility specializes in the sale of halogenated solvents and the recovery

(recycling) of spent solvents. Spent solvents are collected from such industries as: the metal working industries that clean machined and stamped parts in vapor degreasing equipment; rubber molding operations where defective parts are solvent removed from metal inserts; the electronic industry where circuit boards and other components are cleaned and defluxed in batch and continuous conveyor-type solvent defluxing; and industries that spray paint on an assembly line basis where the hangers and conveyor components are cleaned with solvents in on-line vapor degreasers. The facility operates under Environmental Protection Agency (EPA) Identification Number MID 091 605 972. The Standard Industrial Classification (SIC) Codes for the facility are 2869 and 5161.

The source(s) of the Volatile Organic Compound (VOC) contaminated soils which are the subject of this investigation have not been identified. The following list identifies potential sources which may have caused or contributed to the contamination:

- One spill incident was recorded at the facility. In March 1990, a railroad tank car leaked approximately ten gallons of still residue which contained trichloroethane. Approximately ten yards of soil was excavated from the spill area;
- Past operating practices at the Eaton Avenue facility;
- Historical contamination prior to Detrex ownership;
- Contaminated fill materials transported to the site for construction purposes;
- The migration of contamination from adjacent or nearby facilities.

2.3.2 Previous Sampling and Analysis Programs

Previous investigation have been undertaken at this site and are the basis for the proposed RFI described in this plan. Three specific data collection activities have been completed to date and include:

- Hydrogeological Investigation - April 1989

- Background Soil and Groundwater Data Collection Program - Conestoga-Rovers Associates (CRA) - September 1991
- Supplemental Sampling Activities - Background Soil and Groundwater Data Collection Program - Conestoga-Rovers Associates (CRA) - December 1991

2.3.2.1 Summary of Hydrogeological Investigation

Available documents indicate that this study included the drilling of three soil borings; BH-MW-1-89, BH2-89, and BH3-89. Boring locations are indicated in Attachment 4-2.

2.3.2.1 Summary of Hydrogeological Investigation

BH-MW1-89, located east of the building, was completed as a monitoring well and defines the uppermost aquifer and groundwater elevation beneath the facility.

The borehole was advanced using 4-1/4 inch inside diameter (ID) hollow-stem augers to a depth of 60.0 feet below the ground surface. At this depth, augering became inefficient due to the clay rich sediment. The drilling method was then switched to mud rotary using a 3-7/8 inch tricone drilling bit.

Continuous samples were collected for subsequent geotechnical analysis from ground surface to 30.0 feet below grade using precleaned , 2 inch diameter, stainless steel split-spoons. Soil samples were then collected at 5.0 foot intervals until the uppermost aquifer was encountered at depth of 99.0 feet below the ground surface. Two shelby tubes were also collected from this borehole for vertical permeability analysis at depths of 30.0 to 32.0 feet and 54.0 to 56.0 feet below grade. Perched groundwater was not encountered during drilling.

Upon completion of the borehole, a monitoring well was installed approximately 12.0 feet into the sand aquifer at a depth of 111 feet below the ground surface. The well was constructed of 10.0 foot 0.010 inch slotted, Schedule 80, 2 inch diameter flush-threaded PVC, jointed to 2 inch diameter, Schedule 80, flush-threaded PVC riser pipe. A sand pack of quartz sand (No. 20) was placed around and 20.0 feet above the well screen. A 5.0 foot bentonite pellet seal was placed over the sand pack. The remaining annulus was tremie grouted to the surface with a bentonite/cement grout. The well was completed below grade with a lockable cap and flush-mounted protective casing.

A stratigraphic and instrumentation log from BH-MW1-89 is provided in Attachment 4-4.

2.3.2.2 Background of Soil and Groundwater Data Collection Program

Six soil borings were performed during this study (BH1-91 through BH6-91). Their locations are indicated in Attachment 4-3. BH1-91 through BH4-91 were advanced to a total depth of 10.0 feet below the ground surface. BH5-91 and BH6-91 were advanced to a total of 14.0 feet and 16.0 feet below the ground surface, respectively. Perched groundwater was not encountered during drilling. Selected soil samples were submitted to Research Technology International (RTI) for chemical analysis of VOCs.

On 16 August 1991, the on-site groundwater well (MW-BH1-89) was purged and sampled. The well's potentiometric surface, prior to well purging, was measured at 606.55 feet AMSL. This compares to 605.18 feet AMSL recorded during original well installation in April 1989.

With the indication of the potential presence of VOCs within the groundwater aquifer, a decision was made to conduct more extensive well development/purging, followed by resampling, in order to confirm the results.

A submersible pump was initially utilized during the second sampling event to increase the rate and volume of water purged prior to sampling. The original purging had been completed using a bailer and nylon rope. Shortly after initiating pumping with the submersible pump at a pumping rate of approximately 2 gallons per minute, a severe silt presence in the water was encountered which plugged the pump and prevented purging. An attempt to clean the silt from the well utilizing an air-lift pump was unsuccessful. Subsequently, a jetting tool was constructed and utilized which successfully cleaned the silt out the well. The jetting tool consisted of a hose from a portable water supply attached to 110 feet of 1/2 inch diameter PVC rigid piping. A "T" fitting was attached to the surface of the well casing to direct purge water into the adjacent containment system for the transfer facility.

A record was maintained of water injected into the well and water collected within the containment system to estimate potential water loss to the formation. An estimated total of 135 gallons was initially lost to the formation during purging. Subsequently, a submersible pump was used to purge the well again, prior to resampling. During the purging, substantial quantities of silt were again encountered which plugged the submersible pump. Further attempts to clean the monitoring well by alternately removing silt (using the jetting tool) and purging (using the submersible pump) were unsuccessful.

On 18 September 1991, further attempts to purge and resample the monitoring well were suspended. Throughout the well purging program, a total net loss of water to the formation of approximately 60 gallons was recorded.

The results of the report entitled "Background Soil and Groundwater Data Collection Program" indicate a limited VOC presence within the sand fill and upper clay formation in the vicinity of the loading/unloading area. The additional soil sampling indicates that the chemical presence within the clay formation does not extend very deep. The distribution of VOC presence indicated a significant reduction of VOC concentration with depth in the clay formation.

2.3.2.3 Summary of Supplemental Sampling Activities

This study was conducted pursuant to the results of the report entitled "Background Soil and Groundwater Data Collection Program". The supplemental sampling activities included the completion of four borings (BH7-91 through BH10-91), the installation of one monitoring well (BH7-91), and the collection of soil and groundwater samples for chemical analysis.

The results of the supplemental sampling activities indicate a limited VOC presence in the upper fill material and the upper portion of the underlying clay formation. VOCs were not detected in soils at depths BH7-91, nor in groundwater from BH-MW2-91.

2.4 Target Compounds

The target compounds for soil listed in Table 1. The target method detection limits (TMDLs) will be 10 part per billion (ppb, micrograms/kilogram) for target compounds with the exception of xylenes (total) where the TMDL will be 30 ppb.

TABLE 1

Methylene Chloride	1,2 dichlorethene (total)	Toluene
1,1 dichloroethane	1,1,1 trichloroethane	Ethylbenzene
1,2 dichloroethane		1,1,2 trichloroethane
1,1,2,2 tetrachloroethane	Tetrachloroethene	Chloroform
Trichloroethene	Vinyl Chloride	Xylenes (Total)

Required detection limits will adhere to Contract Laboratory Program (CLP) contractually required detection limits. .

2.5 Project Objectives

2.5.1 Objectives

The objectives of the RFI activities are to:

- Determine presence or absence of contaminants at source and in pathways
- Determine types (nature) of contaminants at source and in pathways
- Determine concentrations of contaminants in order to establish concentration gradients
- Determine directions of pathways transport
- Determine boundaries of source and pathways on-site

The objectives of the RFI will consider the selected MDNR Act 307 clean-up criteria (Type A, Type B, or Type C) that will be applied to an eventual closure request. Application of Type A clean-up criteria will require that target compounds be remediated to MDNR approved target detection limits. Application of Type B clean-up criteria considers generic risk assumptions with respect to the target compounds. Application of Type C clean-up criteria will require a site-specific risk assessment with respect to the target compounds and long-term institutional controls of potential migratory pathways.

2.5.2 Data Usage

The types of data proposed to be collected during the RFI are correlated to the intended data usage in this section.

Data collected from qualitative or semi-qualitative analysis [primarily HNU or Photovac MicroTIP photoionization detection (PID)] will be used for health and safety monitoring during implementation of the field portion of the RFI and to aid in the selection of samples for laboratory analysis. Both the Photovac MicroTIP PID and the Hnu PID have an analytical range of 0.2 to 2,000 parts per million (ppm). PIDs measure the concentration of airborne volatile organic compounds detectable by photoionization

The instrument will be equipped with an ultraviolet lamp with a light source of about 11.7 eV to encompass the range of ionization potentials of the target compounds. The instrument will be calibrated daily per manufacturer's directions.

Data collected for geotechnical analysis will be used to evaluate the physical characteristics of the soils in order to determine potential remedial options.

Data collected from the laboratory analysis of chemical compounds will be used for determination of the horizontal and vertical extent of on-site soil contamination, detection of the concentration gradients, determination of the source(s) and migration pathways, and evaluation of remedial action alternatives. In addition, laboratory analytical data will be utilized for determination of hazardous waste characteristics to evaluate the feasibility of excavation as a remedial action alternative.

2.5.3 Data Quality Objective Summaries

A Data Quality Objective Summary is included in Attachment 4-5.

2.6 Sample Network and Rationale

Grid Intervals: The grid intervals for placing soil borings are based on 40.0 foot spacing across the site. The rational for using the 40.0 foot grid interval to select the sampling locations is based on the Michigan Department of Natural Resources (MDNR) Guidance Document for Verification Sampling. This grid interval was modified when building or structures were encountered. The initial sampling will not include borings within any structures. The intervals were then biased in a manner such that areas where overspills may have occurred would not be missed.

Depth of Sampling: Borings will be advanced to a minimum depth of 20 feet below the surface. If field screening (i.e. PID) of soil samples indicates contamination may extend to depths greater than 20 feet below the surface then borings will be advanced until contamination has been vertically defined, based on field screening and observations.

2.6.1 Sampling Intervals

Sampling intervals will occur every 2.5 feet and at changes in lithology. The rationale behind this interval is based on previous borings determining that up to three soil types exist in the stratigraphic column in the approximate depth interval of 0- to 97-feet below the surface. It is the intent of this strategy to collect at least one sample from each soil type from each boring location, provided lithologic strata are thick enough to provid

ample soil volume for sampling. As described in Section 2.2.5.2, Local Geology, the three soil types include a brown to gray medium-grained sand with gravel (fill) from the surface to approximately 3.5 to 4.5 feet is underlain by 1.0 foot of fine sand with some clay, which is underlain by blue/gray to approximately 97.0 feet below grade. The upper two soil types may not be present or distinguishable at all sampling locations.

2.6.2 Sampling Frequency

For VOC analysis, each sample will be screened using a field instrument. From each boring, the highest PID reading for a specific soil type will be analyzed in the laboratory. It is the intent that using this method for frequency of collection will determine the extent and concentration of contaminants in each soil type. However, at least one soil sample per soil type per soil boring location will be submitted for chemical analysis, provided lithologic strata are thick enough to produce ample soil volume to collect a sample.

2.6.3 Sample Location Rationale

The sample locations described in the previous section were selected to provide sufficient data to meet the objectives of the RFI. The locations are based on the data collected during the previous studies of the Eaton Avenue facility. See Attachment 4-6 for proposed boring locations.

2.6.4 Sampling Summary

Table 2 lists the proposed matrix parameters and collection frequency.

TABLE 2

Matrix	Parameters	Frequency
Soil	VOCs (Lab)	Minimum 1/per boring Maximum 3/per boring
Soil	VOCs (PID)	Each boring/every 2.5'
Soil	Geotechnical Permeability, Particle Size Distribution, Soil	One per soil horizon

TABLE 2 (CONTINUED)

	Moisture Content, and Soil Organic Carbon Content)	
Air in Breathing Zone	VOC (PID)	Every 10 minutes during drilling or as needed

Table 3 lists the number of lab soil samples, field blanks, and duplicates to be obtained during field activities associated with the RFI. As described in Sections 2.2.5.2 and 2.6.1, up to three soil types are anticipated to be found in each boring. For estimation purposed in Table 3, it was assumed an average of two soil types would be encountered in each boring. As described in Sections 6.1.2 and 6.1.3 below, one field blank and one duplicate sample will be collected each sampling event (each day). Table 3 assumes four soil borings will be completed each day of soil sampling, thus three out of four sampling locations have "0" as the estimated number of field blanks and duplicates associated with them. The exact number of samples to be collected depends on site conditions and progress made each day. Sampling locations correspond to the seventeen boring location sampling points shown on Attachment 4-6. The locations are generically referred to as 1 through 17 in Table 3.

TABLE 3

Boring Sampling Location	Chemical Lab Samples	Field Blanks	Duplicates
1	2	0	0
2	2	0	0
3	2	0	0
4	2	1	1
5	2	0	0
6	2	0	0
7	2	0	0
8	2	1	1
9	2	0	0
10	2	0	0
11	2	0	0
12	2	1	1
13	2	0	0
14	2	0	0
15	2	0	0
16	2	1	1
17	2	0	0

2.6.5 Other Analytical

It is the intent of the investigation to obtain moisture content, and carbon content from each soil horizon for future reference.

2.7 Project Schedule

The schedule to complete the RFI is discussed in the Project Management Plan (Section 3) under "4. Schedule".

3. PROJECT ORGANIZATION AND RESPONSIBILITY

3.1 Management Responsibility

The RFI is being conducted for Detrex Corporation by Soil and Materials Engineers, Inc., of Plymouth, Michigan, with the approval and oversight by the MDNR and the EPA (Region V). Workplans, data collection plans, quality assurance plans, and reports will be based on the RFI (Attachment I) that was submitted with the Detrex permit.

The Project Manager will be directly responsible to Detrex Corporation and will maintain communication with the MDNR and U.S. EPA as necessary.

The Quality Assurance (QA) Manager is directly responsible to the Project Manager, who has ultimate responsibility for quality assurance of the project. The QA Manager is responsible for conducting staff training in QA procedures and requirements; internal, system, and performance audits; and for identifying and implementing corrective actions.

The Health and Safety Officer also is directly responsible to the Project Manager. The Health and Safety Officer has responsibility to properly train the field crew and any subcontractors in appropriate health and safety techniques, including field instrument use, protective clothing use, and decontamination procedures. The Health and Safety Officer will conduct field audits.

The investigation generally is divided into five categories; site investigations, health and safety, laboratory analysis, investigation analysis, and reporting. Site investigations include field activities such as research, test boring, stratigraphy characterization, and soil sampling. The field crew will consist of a Site Manager, Health and Safety Officer, Field Geologist, and Drill Rig Operator and Assistant, as required.

Health and Safety includes taking precautions and measures necessary to safely assure the completion of the RFI.

Laboratory analysis includes physical and chemical analysis. As discussed in the Project Management Plan (Section 3) under "3.1 Project Organization", chemical analysis will be conducted by Encotech, a U.S. EPA-approved contract laboratory. Physical soil analysis will be conducted by Soil and Materials Engineers, Inc.

Investigation analysis includes date reduction, validation, and evaluation. Procedures for these activities are provided in the Data Management Plan and Quality Assurance Project Plan (QAPjP).

4. QUALITY ASSURANCE OBJECTIVES

Samples from this site have been previously analyzed by two different laboratories, and reservations may exist with respect to validity and accuracy of this data. The intent of the present contracting laboratory is; therefore, to attain a relatively high level of data precision accuracy and completeness demonstrably equal to or superior to previous analyses, equivalent to Level V described in "Data Quality Objectives for Remedial Activities (Development Process)", EPA 540/G-87/003, March 1987. Because previous analyses appear to have been produced without benefit of a project planner specific provisions for data quality, no comparability of previous data with analyses performed under this project plan should be expected.

Section 8.0, Analytical Procedures, contains reference to specific analytical laboratory procedures.

5. SAMPLING PROCEDURES

5.1 Introduction

This plan has been prepared to outline the sampling procedures that Soil and Materials Engineers, Inc. will be following during the environmental testing at the Detrex facility. The plan addresses procedures for sample collection and documentation.

5.2 Sample Collection

The following section describes the procedures for the soil sampling that will be performed.g

5.2..1 Surveying

Seventeen boring locations have been identified (See Attachment 4-6). The number of soil borings has been proportioned to the size of the study area. Boring g locations will be surveyed by a State of Michigan Certified surveyor.

5.2..2 Hand Auger Sampling

The following procedure will be followed if hand augering is to be performed on-site. The locations of any hand augered borings will be limited to the investigation of the utility corridors as potential contaminant migration pathways. Hand augered borings will be limited to a depth of 5 feet below the surface. Soil samples will be collected using a stainless steel hand auger. Collected samples will be transferred from the auger to the appropriate container using a stainless steel spoon. Stones, twigs, and vegetation will be removed from the collected sample.

Boreholes will be backfilled with a bentonite/cement grout. Soil cuttings generated during hand augering activities will be containerized in steel 55-gallon drums. The drums will be sealed, labeled, and stored on site pending waste characterization results..

Sampling devices will be decontaminated prior to each sample's collection. Decontamination will consist of washing the sampling device with non-phosphorus detergent and triple rinsing with deionized water. Decontamination waste will be containerized and properly disposed.

Sample documentation, preservation, and handling will be performed in accordance with the procedures outlined in Sections 5.3 and 5.4 of this plan.

5.2..3 Hollow-stem Auger Sampling

The following procedures will be followed for the site described in the Workplan which designates soil sample collection by hollow-stem auger method.

The soil samples will be collected by advancing helical hollow-stem augers into the ground using a truck-mounted drilling rig. Samples will be recovered at the specified depth intervals using a split-spoon sampler following the procedures described in ASTM Specification D-1586.

Collected samples will be transferred from the split-spoon sampler to the appropriate container using a stainless steel spoon. Large stone, twigs, and vegetation will be removed from the collected sample.

Hollow-stem augers and split-spoon samplers will be decontaminated prior to the drilling of each boring. Decontamination will consist of steam cleaning the equipment.

Sampling devices will be decontaminated prior to each sample's collection. Decontamination will consist of washing the sampling device with non-phosphorus

detergent and triple rinsing with deionized water. Decontamination waste will be containerized and properly disposed.

Each borehole will be backfilled. Backfill material will be a bentonite/cement slurry.

Soil cuttings generated during hollow-stem auger boring activities will be containerized in steel 55-gallon drums. The drums will be sealed, labeled, and stored on site pending waste characterization results.

Sample documentation, preservation, and handling will be performed in accordance with the procedures outlined in Sections 5.3 and 5.4 of this plan.

5.2.4 Auger Decontamination Area

Equipment and personal protective clothing decontamination will be conducted in an area that is designed and operated to collect materials resulting from the decontamination efforts; and to prevent run-on, run-off, and the release of these materials to the environment. The designated area is the loading/unloading area on the east side of the building, south of the transfer facility. Section 4-Attachment 4-3 (Previous Sample Locations) identifies this area as "concrete loading/unloading area". This area is a sloped concrete pad surrounded by curbing. The decontamination area will be lined with Visqueen and a plastic pool will be used to collect the decontamination water. The decontamination water will be transferred to 55 gallon drums pending laboratory analysis.

5.3 Sample Packaging, Handling, and Shipment

Water samples, in 40 ml vials, are taken in duplicate, sealed in zip-lock bags (two vials, one sample, one bag), and placed in the shipping container. Each soil sample is placed in a single jar, closed, sealed in a zip-lock bag (one per sample), and placed in the shipping container. Freezer packs are placed with the samples to fill about ten to fifteen percent of the interior space of the container. The contents are covered with clean vermiculite, and the container is closed and sealed with clear packing tape. A label is affixed to the top of the shipping container to indicate the contents. Shipping containers are then shipped to the laboratory.

Site samples will be soils, exclusively, but trip blanks and field blanks will be water samples, and provision is made for both types.

Sample containers for water samples are 40 ml clear borosilicate glass (precleaned by the manufacturer) and closed with open-top black phenolic caps with Teflon-lined silicone liners (catalogue number 225300) from Wheaton, 1501 North Tenth Street, Millville, New Jersey 08332, (800) 225-1437.

Soil sample containers will be obtained from the selected laboratory, Encotech. Soil sample containers will be 4.41 ounce, 120-milliliter, wide mouth glass vial with a polypropylene cap and Teflon liner. Cleaning procedures for sample containers will be consistent with the U.S. EPA guidance document entitled "Specifications and Guidance for obtaining Contaminant-Free Sample Containers," dated April 1990. Containers will be rinsed three times with tap water prior to rinsing three times with ASTM Type I organic-free water. The containers, liners and caps will be oven dried at 105C - 125C for 1 hour and allowed to cool to room temperature in an enclosed contaminant-free room.

Soil and water samples are maintained at a temperature of 4° C from the time they are collected to the time they are analyzed. The temperature of the samples will be controlled with a portable refrigerator. Water samples for this project are trip blanks and field blanks (decontamination rinses) and require no additional preservation. Trip blank samples consist of ASTM Type I deionized water in 40 ml vials, prepared by the sample custodian on demand by the field sampling team on the day of each sampling event. One trip blank, in duplicate, is prepared for each sampling event and is acquired from the laboratory not more than twenty-four hours in advance of the sampling event.

Holding times for volatile organic compounds analysis are fourteen days from the period of time from collection to that of analysis for both soil and acid-preserved water samples. See Section 5.4.4, Chain-of-Custody Procedures.

5.4 Sample Documentation

Collected samples will be documented through the use of field forms and soil boring logs. These forms are provided in Attachment 4-7. The forms ensure comprehensive documentation of the field procedures and observations.

5.4.1 Field Forms

Soil sampling procedures will be documented using a field form (Attachment 4-5). Information on the field form includes site location, date and time of sampling, decontamination procedures, and sample description.

5.4.2 Soil Boring Logs

Lithologies encountered during drilling will be documented using a soil boring log (Attachment 4-7). Boring logs will be completed by a qualified geologist. Information recorded on the soil boring log includes lithology type and depth encountered, sampling interval, blow counts, sample recovery, and interval PID readings.

5.4.3 Sample Labeling

Specific sample labeling procedures are necessary to prevent misidentification of samples. Sample labeling will include project name, sample identification number, name of sampler, parameter(s) to be analyzed, preservatives, and sampling date and time. In addition, sample tags will also be used to identify samples. The sample tags will indicate both sample number and sample location. Sample locations will correspond to the sampling points shown on Attachment 4-6. Both sample labels and tags will be marked with an indelible ink pen.

5.4.4 Chain-of-Custody Procedures

Chain-of-custody (COC) forms will be issued by the Encotech laboratory sample custodian. The Encotech COC form will be provided to the U.S. EPA. The COCs will be completed in the field. The COC will indicate the method of preservation and compliance with preservation protocol. The date and time of sample collection will be the beginning of the 14-day holding time for soil and acid-preserved water samples to be analyzed for volatile organic compounds.

The names of the sample custodian and the sampling representative will be printed on the COC form, and each will sign the COC when the form is completed. A copy of the COC will be provided to the sampling representative. A copy of the field sampling record will be provided to the sample custodian, Quality Assurance Office, and the department supervisor.

The serial number of the COC and the serial number of each sample will be issued at the time the COC is completed in the field and assigned sequentially from the last COC and sample numbers issued by the sample custodian. Each COC number and sample number is a five digit number, and is unique and distinct from other COC numbers and

sample numbers. The sample number is designated by association with a unique identifier provided by the sampling team, and appearing on a label attached to the sample container. The sample custodian will attach a label to the sample container indicating the sample number. A description of the sample set, including the COC number and the number of each sample, will be recorded in the laboratory sample log. The samples are placed in a box labeled with the COC number, sample numbers, and a client name, and placed in a refrigerator provided with a lock which is accessible only to the sample custodian, analyst, Quality Assurance Office, and department supervisor.

An assignment (attached) is generated from the sample log by the sample custodian and includes the client name, COC number, serial number, and a summary description of each of the samples, as well as the log-in date and due dates for the analysis and analytical report. The assignment sheet is relinquished to the department supervisor who assigns the analysis and transfers r of the samples to the analyst by indicating the analyst name and assignment on the assignment sheet. The samples remain in the custody of the analyst until they are scheduled for disposal, which will be six months after the data submission. The date of sample disposal is noted in the laboratory sample log.

A field logbook will be maintained through the course of field activities. The field logbook will record field measurements and sampling equipment used. Whenever a sample is obtained, a detailed description of the location will be recorded. The date, time, depth, volume, and sample identification number will also be recorded.

6. QUALITY CONTROL

Quality control procedures will be performed to document the accuracy and precision of the sampling and analyses. Quality control procedures will include field and laboratory programs.

6.1 Field Program

Quality Control procedures which will be implemented during sampling will include trip blanks, field blanks, and duplicates.

6.1.1 Trip Blanks

One trip blank will be provided with each shipping container of soil samples to detect any potential contamination due to the sampling containers or sample transport. A trip blank involves filling sample containers with reagent grade water and transporting the containers with the sample containers used for field samples. The trip blank is submitted with the samples for laboratory analyses.

6.1.2 Field Blanks

One field blank will be collected during each sampling event to detect any potential contamination from the sampling equipment or airborne particles. A day of sampling will constitute a sampling event. A field blank involves passing reagent grade water through each type of sampling device, such as the split barrel sampler and the hand auger, and into sample bottles in the field at the time of sample collection. The field blank will be collected at anytime after the first field soil sample is obtained and the sampling equipment has been subsequently decontaminated. The field blank is submitted with collected samples for laboratory analyses.

6.1.3 Duplicates

One duplicate sample will be collected for each sampling eventduring the soil sampling to document concentration variations. The duplicates will be discrete samples. The duplicates will be submitted with the samples for laboratory analyses.

7. CALIBRATION PROCEDURES AND FREQUENCY

7.1 Field Instrument

The PID will be calibrated daily using manufacturer supplied calibration span gas.

7.2 Laboratory Instruments

Section 8, Analytical Procedures, contains reference to analytical laboratory procedures.

8. ANALYTICAL PROCEDURES

Detrex has chosen an U.S. EPA approved laboratory for the analysis of samples with regard to the Eaton Facility RFI. The contact name, telephone number, and location of the laboratory to be retained by Detrex for analytical services is provided below.

Encotech,
3985 Research Drive Park Drive
Ann Arbor, Michigan 48108
Contact: Jim Kuehn, (313)-761-1389

In addition, specific information pertaining to analytical calibration procedures, including frequency; the internal quality control checks; data reduction, validation and reporting; performance and system audits; instrument maintenance; precision, accuracy, and completeness tests; corrective action; and quality assurance reports can be obtained from Encotech. The CLP SOW will be followed without deviation.

The U.S. EPA appropriate preparation and analytical methods or the U.S. EPA approved standard methods (CLP SOW) will be used in preparing and analyzing the soil samples. The selected methods will be capable of achieving the TMDLs referenced in Section 2.4, Target Compounds, above. Specific references to the preparation method, analytical method (by section number), detection limit, and specific procedural requirements for quality assurance/quality control measures will be provided for each parameter being analyzed.

9. INTERNAL QUALITY CONTROL CHECKS

9.1 Laboratory Analyses

Internal QC checks are provided for laboratory analyses through the requirements of the CLP SOW protocols and internal laboratory protocols. CLP SOW specifications for instrument calibration, surrogate recoveries, and other analytical QC criteria are assessed on a daily basis by instrumental analysts and by the Laboratory Supervisor and Quality Assurance Manager on a project-by-project basis. Analysts are required to notify the Laboratory Supervisor on short notice of any instance of non-compliance. The

Laboratory Supervisor makes the initial determination of the effect on the data, (including holding time compliance) and makes the decisions as to action to correct analytical difficulties (such as switching to another instrument, repreparation of analytical or arrangements for equipment repair). Descriptions of instances of noncompliance and instrumental difficulties are documented in laboratory records, including instrument run logs and laboratory notebooks, and is overseen by the Laboratory Supervisor and audited by the Quality Assurance Manager.

The Quality Assurance Manager is notified in the event of serious instances of non-compliance, and further recommendations are made for corrections. At the discretion of the Quality Assurance Manager, notification and documentation of difficulties may be required in writing and are subject to distribution to Laboratory Management. Client data is audited by, and subject to the approval of, the Quality Assurance Manager.

10. DATA REDUCTION, VALIDATION, AND REPORTING

10.1 Data Reduction

Methods used for reducing laboratory data are described in the instrumental data system manual and are performed to meet the specifications of the SOW.

10.2 Data Validation

Data validation will be performed by the Quality Assurance Manager using the U.S. EPA contract Laboratory Program National Functional Guidelines for Organic Data Review, Multi-Media, Multi-Concentration, Draft (November 7, 1989), with modifications to reflect the acceptance criteria reflected in the more recent SOW. Computer-Aided Data Review and Evaluation (CADRE) will not be available and will not be used. A form summarizing calibration outliers will be provided. A narrative will also be provided noting compliance and instances of non-compliance with the acceptance criteria specified in the SOW, and the effect of any analytical non-compliance on the data.

10.3 Data Reporting

The format for reporting data is completely described in the SOW, with the exceptions noted in Section 8., Analytical Procedures. A list of deliverables from th

laboratory will be submitted with the evidence file including, but not limited to, the field sampling record, the laboratory COC form, assignment sheet, analytical data package, and data review and validation narrative. The evidence file is ultimately relinquished to the Project Manager by the Quality Assurance Manager.

Confirmation sampling data used to verify that a given area is not contaminated above acceptable levels that have been established and to support remediation decisions will include related quality control data. At a minimum, documentation will be submitted for field blanks, trip blanks, duplicate spikes, field and laboratory duplicates, control limits, sampling holding times, and method detection limits.

11. PERFORMANCE AND SYSTEM AUDITS

See Section 9., Internal Quality Control Checks.

12. PREVENTIVE MAINTENANCE

12.1 Field Instruments

As stated in section 7.1, the PID will be calibrated daily using manufacturer's suggested span gas. In addition, the PID will be checked daily to verify that the instrument is free of material that may interfere in the effective operation of the instrument.

12.2 Laboratory Instruments

Preventative maintenance of the gas chromatograph/mass spectrometer system that will be used for the analysis of these samples is provided through the manufacturer's service contract on a quarterly basis. Provision is also made for daily inspection of overall instrument performance through routine system checks, including tuning and calibration. Selections of spare parts for the purge-and-trap system, gas chromatograph, mass spectrometer, and data system are well established and maintained by laboratory personnel.

13. SPECIFIC ROUTINE PROCEDURES USED TO ASSESS DATA PRECISION, ACCURACY, AND COMPLETENESS

Specifications for the assessment of data quality for this project are described in Section 10.2, Data Validation. Other procedures are described in Section 9., Internal Quality Control Checks, which includes Performance and Systems Audits.

14. CORRECTIVE ACTION

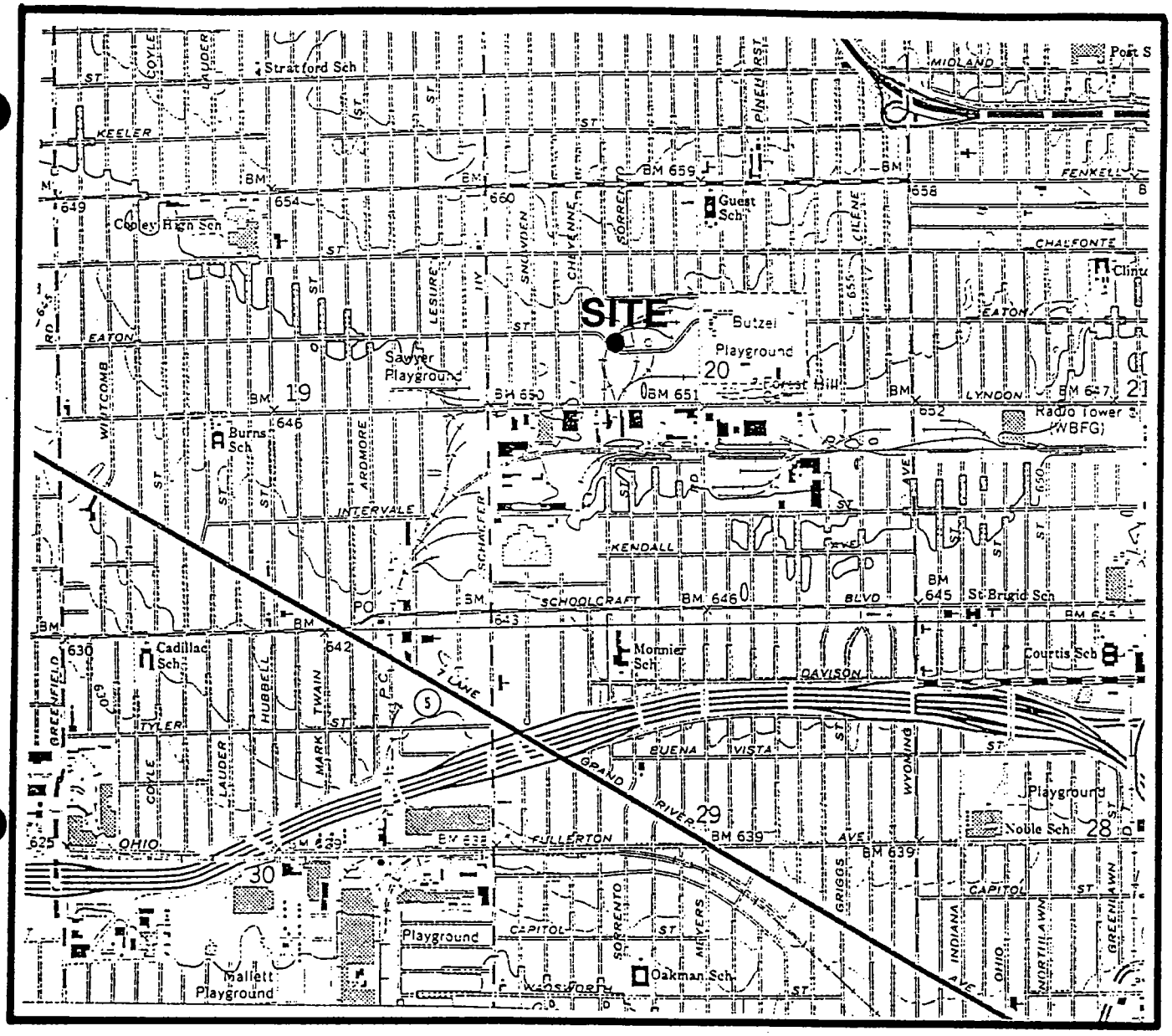
The Quality Assurance Manager is responsible for the development and enforcement of the Corrective Action Plan. Responsibility for implementing Corrective Action Plans resides primarily with the Laboratory Supervisor and with individual analysts, as delegated. Procedures for implementing corrective action is described in Section 9., Internal Quality Control Checks, which includes Performance and Systems Audits.

15. QUALITY ASSURANCE REPORTS TO MANAGEMENT

Quality Assurance reports to Management are provided in the form of data validation narratives performed by the Quality Assurance Manager. Normally, these are included in the laboratory data evidence file described in Section 10., Data Reduction, Validation, and Reporting. These are routinely provided on a case-by-case basis as described in Section 9., Internal Quality Control Checks, which includes Performance and Systems Audits. In the event of serious non-routine analytical or procedural difficulties, the Quality Assurance Manager, Laboratory Supervisor, and individual analysts are authorized to notify Management in writing.

ATTACHMENT 4-1

USGS TOPOGRAPHY MAP



ROYAL OAK QUADRANGLE
MICHIGAN
7.5 MINUTE SERIES (TOPOGRAPHIC)

1968
PHOTOREVISED 1981
DMA 4368 I NW—SERIES V862

QUADRANGLE LOCATION

NORTH

SCALE 1:24 000

1/2 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

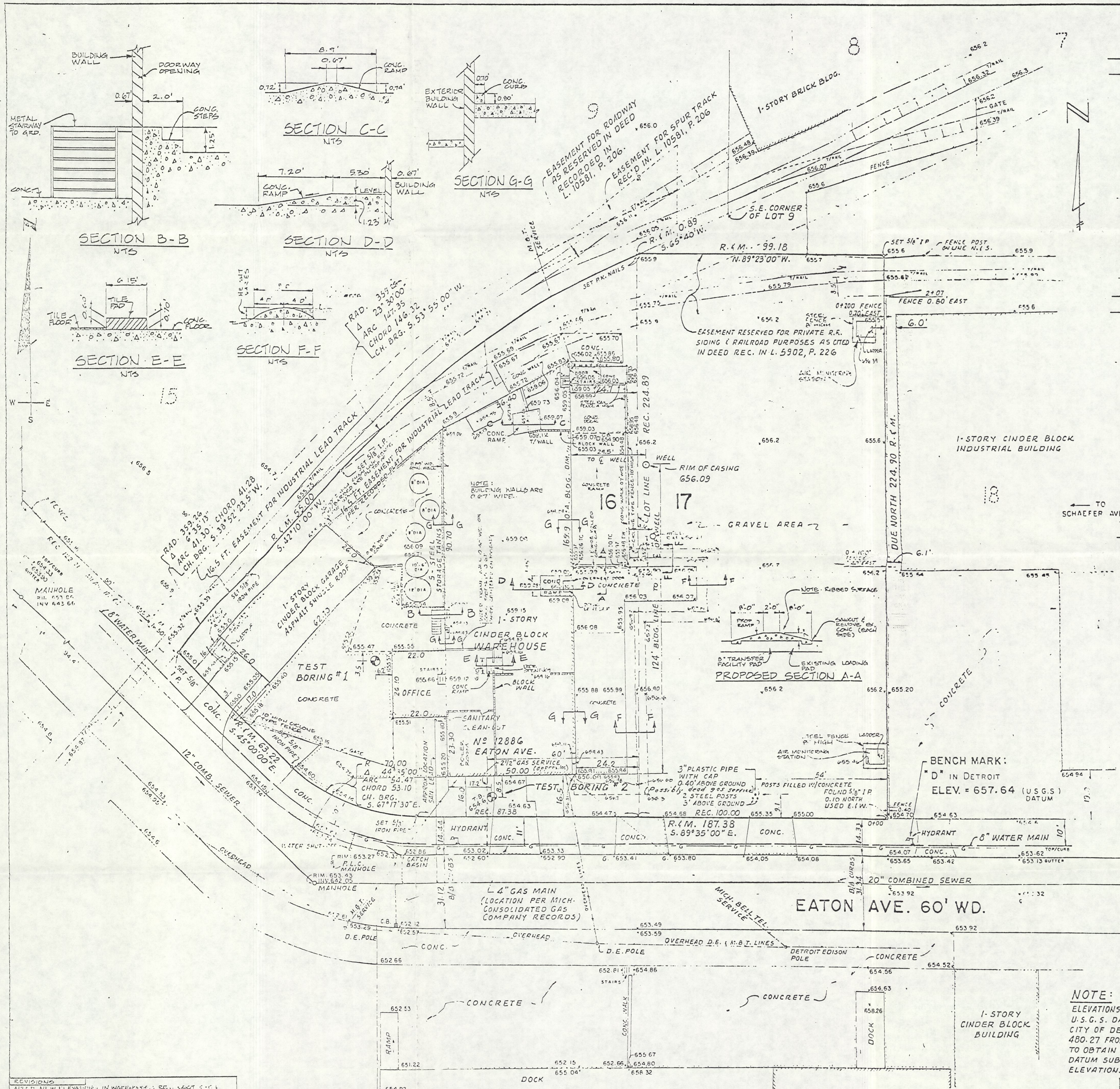
CONTOUR INTERVAL 5 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

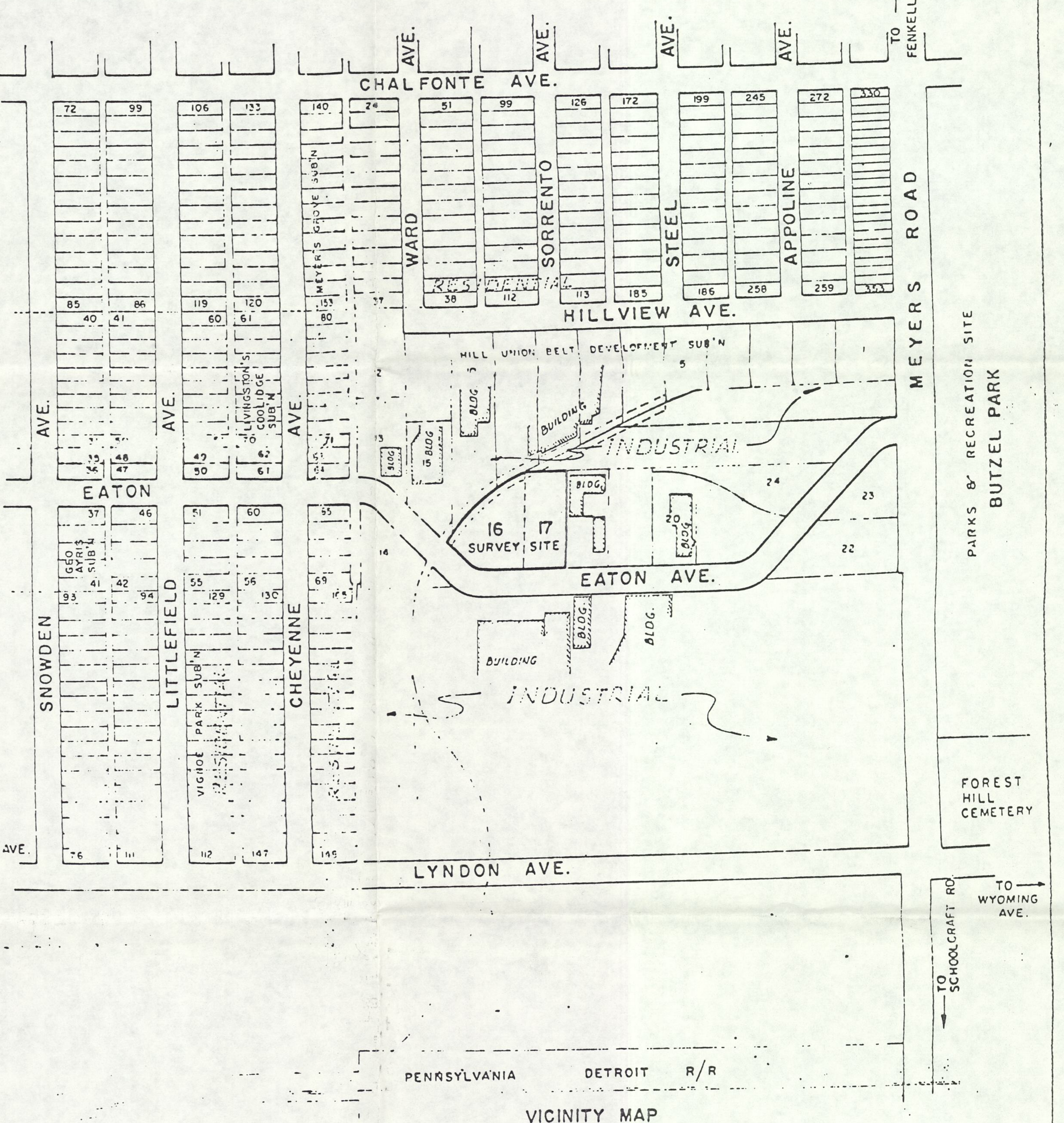
Date 5-23-94 Drawn By LAK Scale AS SHOWN Job PE21229	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc.	SITE LOCATION DIAGRAM DETREX CORPORATION 12886 EATON AVENUE DETROIT, MICHIGAN

Figure No. 1

ATTACHMENT 4-2

SITE LOCATION MAP





VICINITY MAP

SCALE: 1" = 200'

LEGAL DESCRIPTION

LOTS 16 AND 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION", BEING THE N. 1/2 OF THE S. E. 1/4 OF THE N. W. 1/4 OF SEC. 20, T. 1 S., R. 11 E., CITY OF DETROIT, WAYNE COUNTY, MICHIGAN, ACCORDING TO THE PLAT THEREOF RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR WAYNE COUNTY, MICHIGAN IN LIBER 60 OF PLATS ON PAGE 62;

SUBJECT HOWEVER TO A PERMANENT EASEMENT HERETOFORE GRANTED TO THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD OVER A STRIP OF LAND ON THE N'LY SIDE OF SAID LOTS FOR AN INDUSTRIAL RAILROAD TRACK AS PER DEED RECORDED IN L.2298 OF DEEDS ON P. 176-178 FOR, AND,

RESERVING TO THE SELLERS, THEIR HEIRS AND ASSIGNS, AN EASEMENT OVER AND ACROSS THE N.W.'LY AND N'LY REAR PORTIONS OF SAID LOTS 16 & 17 DESCRIBED AS ALL THAT PORTION OF SAID LOTS LYING N'LY AND N.W.LY OF A LINE EXTENDING ACROSS SAID LOTS THAT IS 8½ FEET S'LY OF THE CENTER OF THE RAILROAD SIDING AS PRESENTLY INSTALLED AND IN USE CONNECTING WITH THE TRACK OF THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD COMPANY; THE SAID EASEMENT TO COVER THE RIGHT TO USE THE SAME FOR PRIVATE RAILROAD SIDING AND RAILROAD SERVICES OVER SAME TO THE SAID PENNSYLVANIA, OHIO AND DETROIT RAILROAD, JOINTLY WITH ALL OTHER OWNERS OF LOTS 18, 19, 20, 21, 22, 23 AND 24 OF HILL UNION BELT DEVELOPMENT SUBDIVISION AFORESAID, SO THAT RAILROAD SERVICE MAY BE HAD BY ALL OTHER OWNERS ALONG THE LENGTH OF THE SIDING AS NOW INSTALLED AND IN USE.

NOTE: ABOVE DESCRIPTION IS FROM DEED TO DETROIT REX PRODUCTS COMPANY DATED DEC. 30, 1941, RECORDED JANUARY 8, 1942 IN LIBER 5902, DEEDS, PAGE 226.

CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY HEREON DELINEATED AND THAT THE DISTANCES SHOWN ARE TRUE AND CORRECT BY ACTUAL FIELD MEASUREMENTS AND THAT THERE ARE NO ENCROACHMENTS UNLESS OTHERWISE SHOWN.

WARNER, CANTRELL & PADMOS, INC.

DATE: July 11, 1985 BY: Donald A. Beaupied
DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512

NOTE:
ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM. TO OBTAIN CITY OF DETROIT DATUM SUBTRACT 480.27 FROM ELEVATIONS SHOWN. TO OBTAIN U.S.C. & G.S. DATUM DATUM SUBTRACT 0.51 FROM ELEVATIONS SHOWN:

NOTE: THE WAYNE COUNTY AIR POLLUTION CONTROL OFFICE (224-4650) REPORTS THROUGH THEIR METEOROLOGIST, DAVID DERENZO, THAT THE PREVAILING WINDS ARE OUT OF THE SOUTHWEST. THIS INFORMATION IS BASED ON NATIONAL WEATHER SERVICE RECORDS ON FILE IN THEIR OFFICE.

DATE: July 11, 1985

REVISIONS: JULY 26, 1985
ADD TEST BORING & WELL LOCATION INFO. APRIL 10, 1989
UPDATED FOR TRUCK WELL & PAVEMENT CONSTRUCTION APRIL 24, 1990
ADDED CROSS SECTIONS B-B, C-C, D-D & E-E (NEW TANK AREA WALLS) 4-23-91

PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N.½ OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T. 1S., R. 11 E., CITY OF DETROIT, WAYNE CO., MICH. (L. 60, P. 62)

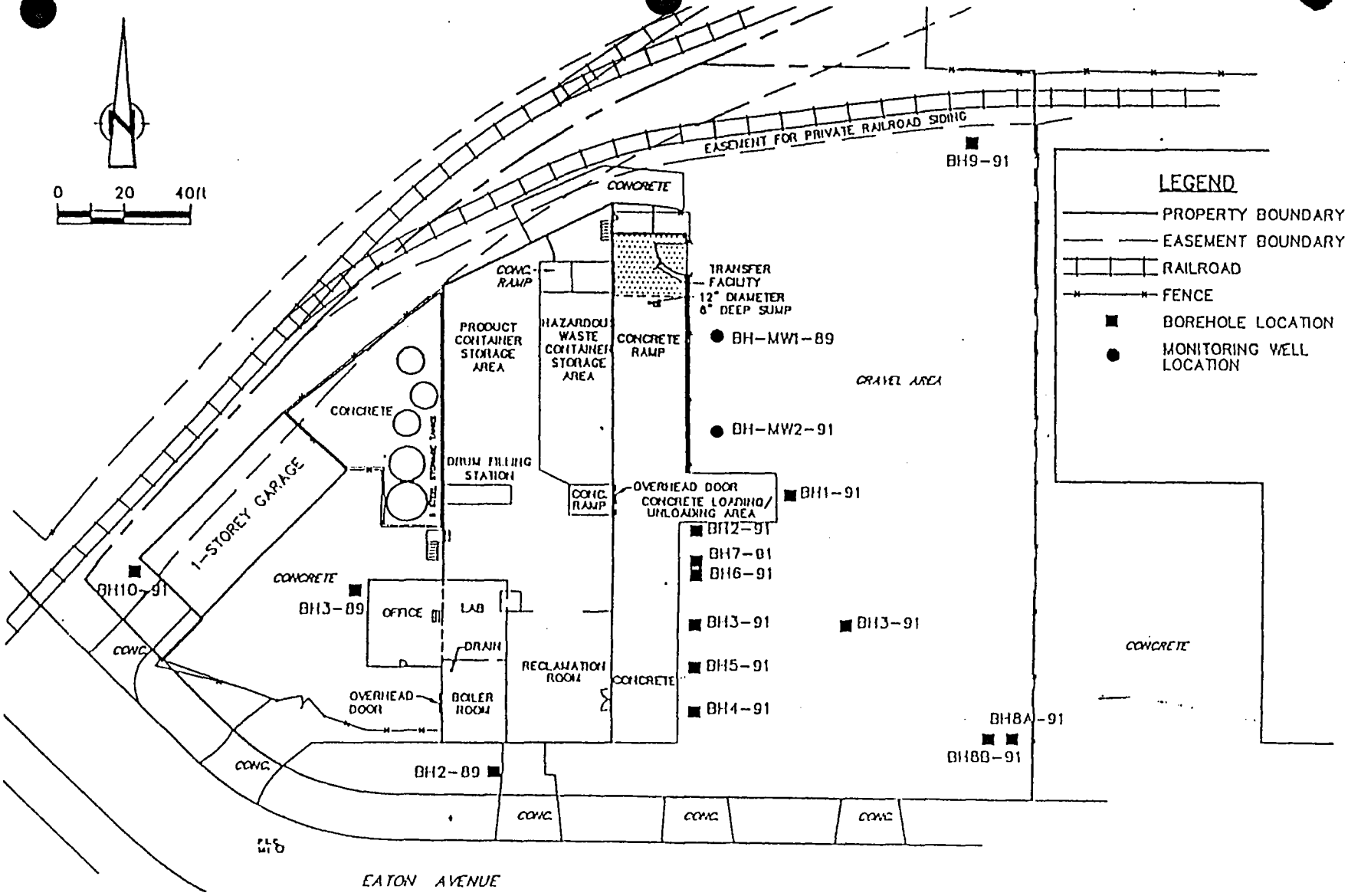
SCALE: 1" = 20' DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
20788 ORCHARD LAKE RD.
313-478-9494 FARMINGTON HILLS, MI. 48336

JOB NO. 900408
PLAN FILE
N.B. 615
SHEET 1 OF 1

ATTACHMENT 4-3

PREVIOUS SAMPLE LOCATIONS



NOTE:

DIAGRAM BASED ON PLANS FROM TESTING ENGINEERS & CONSULTANTS, INC. OCTOBER 1992

MONITORING WELL AND BOREHOLE LOCATION DIAGRAM
DETREX CORPORATION
12886 EATON AVENUE
DETROIT, MICHIGAN

Date	5-23-94
Drawn By	LAK
Scale	AS SHOWN
Job	PE21229

BAY CITY
KALAMAZOO
LANSING
PLYMOUTH
TOLEDO

soil and materials engineers, inc.

Figure No. 2

ATTACHMENT 4-4

BORING LOGS AND WELL LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-08)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH7-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 8, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
2.5	FILL, medium grained, loose, brown, moist						
5.0		-5.0					
	CL-CLAY, some sand, fine grained, stiff, gray, moist	-6.0					
7.5	CL-CLAY, trace gravel, stiff, gray, moist		10" ø BOREHOLE				
10.0							
12.5	– same, very stiff		! CUTTINGS				
15.0							
17.5							
20.0	– same, with trace sand						
				1SS		15	0
22.5							
25.0				2SS		17	0
	END OF HOLE @ 25.0 FT. BGS	-25.0					
	NOTES: 1. Water not encountered.						
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-09)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH8A-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
2.5	FILL, some sand, trace gravel, medium grained, loose, brown, moist	-2.0	6" ø BOREHOLE				
	Concrete	-4.0 (-1.0)	CUTTINGS				
5.0	SP-SAND, trace gravel, medium to coarse grained, loose, gray, wet			1SS		7	0
7.5	CL-CLAY, trace gravel, trace sand, fine grained, firm, gray, wet	-7.5		2SS		3	0
10.0	END OF HOLE @ 10.0 FT. BGS	-10.0					
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

[illegible] ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-10)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH9-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
2.5	FILL, some sand, trace brick, trace gravel, medium grained, loose, black stained, moist		10" ø BOREHOLE	1SS		15	6
5.0			CUTTINGS	2SS		4	6
	SC-SAND, some clay, medium grained, soft, brown, moist	-5.0 -6.0		3SS		7	0
7.5	CL-CLAY, trace silt, trace gravel, fine grained						
	CL-CLAY, some silt, trace sand, trace gravel, fine grained, stiff, brown, moist	-8.0		4SS		26	0
10.0	END OF HOLE @ 10.0 FT. BGS	-10.0					
	NOTES: 1. Water not encountered.						
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-11)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH10-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 14, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE N VALUE	SAMPLE HNu (ppm)
	FILL, some sand, medium grained, loose, tan, black stained, moist			1SS		16	0
2.5	FILL, some sand, trace gravel, medium grained, medium dense, brown, moist	-2.0	10" ø BOREHOLE	2SS		32	0
5.0	CL-CLAY, some silt, trace sand, fine grained, firm, gray brown mottled, moist	-4.0	CUTTINGS	3SS		15	0
7.5				4SS		26	0
	CL-CLAY, some silt, trace sand, trace gravel, fine grained, stiff, brown, moist	-8.0		5SS		33	0
10.0	END OF HOLE @ 10.0 FT. BGS	-10.0					
	NOTES: 1. Water not encountered.						
12.5							
15.0							
17.5							
20.0							
22.5							
25.0							
27.5							
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91
(Page 1 of 4)
PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991
CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY
LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu ppm
2.5	FILL, medium grained, loose, brown, moist, black stained						
	SC-SAND, some clay, fine grained, loose, moist	-3.0					
5.0	CL-CLAY, trace silt, trace gravel, fine grained, stiff, brown, moist	-4.0					
7.5			4" ø CASING				
10.0			CEMENT/ BENTONITE GROUT				
12.5							
15.0	CL-CLAY, trace gravel, fine grained, stiff, gray, moist	-13.5	10" ø BOREHOLE				
17.5			CEMENT/ BENTONITE GROUT				
20.0	- same, trace sand						
22.5			2" ø WELL PIPE				
25.0							
27.5			3 7/8" ø MUD ROTARY				
30.0							
32.5							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ⬭ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91 (Page 2 of 4)

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNU (ppm)
35.0	CL-CLAY, trace gravel, fine grained, stiff, gray, moist						
37.5							
40.0							
42.5			2"ø WELL PIPE				
45.0							
47.5							
50.0			CEMENT/ BENTONITE GROUT				
52.5							
55.0			3 7/8"ø MUD ROTARY				
57.5							
60.0							
62.5							
65.0							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

CHEMICAL ANALYSIS ◯ WATER FOUND ▽ STATIC WATER LEVEL ▼

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
67.5							
70.0	– same, trace sand						
72.5							
75.0			3 7/8" ø MUD ROTARY				
77.5			CEMENT/ BENTONITE GROUT				
80.0							
82.5			2" ø WELL PIPE				
85.0							
87.5							
90.0	– same, soft			1SS		8	
92.5	– same, trace sand, stiff		BENTONITE PELLET SEAL	2SS		17	
95.0	– same, trace sand, firm			3SS		14	
	– same, trace sand, stiff						
97.5	SM-SAND, some gravel, some clay, some silt, medium to coarse grained, dense, gray, wet	-97.0	SAND PACK / WELL SCREEN	4SS		49	
				5SS		86	

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

(L-07)

PROJECT NAME: BACKGROUND DATA COLLECTION PROGRAM
HOLE DESIGNATION: BH-MW2-91 (Page 4 of 4)

PROJECT NO.: 2471
DATE COMPLETED: OCTOBER 9, 1991

CLIENT: DETREX CORPORATION, EATON AVENUE
DRILLING METHOD: HSA / ROTARY

LOCATION: DETROIT, MI
CRA SUPERVISOR: MARK GLIHA

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEVATION ft AMSL	MONITOR INSTALLATION	SAMPLE NUMBER	SAMPLE STATE	SAMPLE 'N' VALUE	SAMPLE HNu (ppm)
100.0	SP-SAND, trace gravel, trace silt, medium to coarse grained, dense, gray, wet	-100.0	3 7/8" ø MUD ROTARY; SAND PACK; WELL SCREEN; 2" ø WELL PIPE	6SS		65	
102.5	SW-SAND, fine grained, very dense, gray, wet	-102.0		7SS		114	
	- same, except fine to medium, dense.						
105.0	- same, except fine, very dense			8SS		87	
	SP-SAND, trace gravel, fine, medium to coarse grained, dense, gray, wet	-106.0		9SS		88	
107.5	END OF HOLE @ 107.5 FT. BGS	-107.5					
110.0							
112.5							
115.0							
117.5							
120.0							
122.5							
125.0							
127.5							
130.0							

SCREEN DETAILS:
Screened Interval:
97.5 to 107.5' BGS
Length -10.0'
Diameter -2.0"
Slot # 6
Material -Stainless Steel
Sand pack interval:
93.5 to 107.5' BGS
Material -Silica Sand

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE: REFER TO CURRENT ELEVATION TABLE

ATTACHMENT 4-5

DATA QUALITY OBJECTIVE SUMMARY FORM
(FIELD LOG)

TABLE 4-2
DQO SUMMARY FORM

1. SITE

EPA REGION _____

NAME _____
LOCATION _____
NUMBER _____

PHASE _____
RI1 RI2 RI3 ERA FS RD RA
(CIRCLE ONE)

2. MEDIA *(CIRCLE ONE)*	SOIL	GW	SW/SED	AIR	BIO	OTHER _____

3. USE *(CIRCLE ALL THAT APPLY)*	SITE CHARAC. (H&S)	RISK ASSESS.	EVAL. ALTS.	ENGG DESIGN	PRP DETER.	MONITORING REMEDIAL ACTION	OTHER _____

4. OBJECTIVE _____

5. SITE INFORMATION

AREA _____ DEPTH TO GROUND WATER _____
GROUND WATER USE _____
SOIL TYPES _____
SENSITIVE RECEPTORS _____

6. DATA TYPES *(CIRCLE APPROPRIATE DATA TYPES)*

A. ANALYTICAL DATA

pH	PESTICIDES	TOX
CONDUCTIVITY	PCB	TOC
VOA	METALS	BTX
ABN	CYANIDE	COD
TCLP	_____	_____

B. PHYSICAL DATA

PERMEABILITY	HYDRAULIC HEAD
POROSITY	PENETRATION TEST
GRAIN SIZE	HARDNESS
BULK DENSITY	_____
_____	_____

7. SAMPLING METHOD *(CIRCLE METHOD(S) TO BE USED)*

ENVIRONMENTAL	BIASED	GRAB	NON-INTRUSIVE	PHASED
SOURCE	GRID	COMPOSITE	INTRUSIVE	_____

8. ANALYTICAL LEVELS *(INDICATE LEVEL(S) AND EQUIPMENT & METHODS)*

LEVEL 1 FIELD SCREENING - EQUIPMENT _____
LEVEL 2 FIELD ANALYSIS - EQUIPMENT _____
LEVEL 3 NON-CLP LABORATORY - METHODS _____
LEVEL 4 CLP/RAS - METHODS _____
LEVEL 5 NON STANDARD _____

9. SAMPLING PROCEDURES

BACKGROUND - 2 PER EVENT OR _____
CRITICAL (LIST) _____
PROCEDURES _____

10. QUALITY CONTROL SAMPLES *(CONFIRM OR SET STANDARD)*

A. FIELD
COLLOCATED - 5% OR _____
REPLICATE - 5% OR _____
FIELD BLANK - 5% OR _____
TRIP BLANK - 1 PER DAY OR _____

B. LABORATORY
REAGENT BLANK - 1 PER ANALYSIS BATCH OR _____
REPLICATE - 1 PER ANALYSIS BATCH OR _____
MATRIX SPIKE - 1 PER ANALYSIS BATCH OR _____
OTHER _____

11. BUDGET REQUIREMENTS

BUDGET _____ SCHEDULE _____
STAFF _____

CONTRACTOR _____ PRIME CONTRACTOR _____
SITE MANAGER _____ DATE _____

FOR DETAILS SEE SAMPLING & ANALYSIS PLAN

COM SF DQO 1.002

TABLE 4-2 (CONTINUED)

DQO SUMMARY FORM INSTRUCTIONS

1. SITE - Identify the site and phase of the work to be conducted
   - NAME - Site name or assignment as stated in the WA
   - LOCATION - City or Town County and State where site is located
   - NUMBER - Site number as stated in the WA
   - EPA REGION - EPA Region where the site is located
   - PHASE - Circle work phase for which DQO's are being developed: (number sequentially for each phase as appropriate):
     - RI - Remedial
     - ERA - Expedited Response Action
     - FS - Feasibility Study
     - RD - Remedial Design
     - RA - Remedial Action

2. MEDIA - Circle the media being investigated; only one form will be completed for each media.
   - SOIL - Surface and subsurface soils
   - GW - Ground water
   - SW/SED - Surface water and sediment (a sediment sample will be taken if possible at each surface water sampling location)
   - AIR - Air quality and respirable dust monitoring
   - BIO - Biological monitoring, flora and fauna
   - OTHER - Indicate other "media" being investigated i.e. buildings, underground conduits, etc.

3. USE - Circle the intended use(s) of the data to be developed.
   - SITE CHARAC. (H&S) - Site characterization which includes a determination of the level(s) of health and safety protection required at the site
   - RISK ASSESS - Risk assessment, data to be used to perform the endangerment assessment or public health evaluation
   - EVAL. ALTS. - Evaluate alternatives, data will be used to evaluate or screen remedial/technological alternatives
   - ENG'G DESIGN - Data will be used to perform detailed engineering design of remedy
   - MONITORING - Data will be used to monitor during remedy implementation or establish baseline conditions for long term monitoring after site remediation
   - PRP DETERMINATION - Data will be used to confirm/fingerprint contaminants to specific potentially responsible parties for possible future or pending enforcement actions
   - OTHER - Indicate other specific data uses

4. OBJECTIVE - Provide a concise, specific statement that answers the question "Why am I taking these samples?"

5. SITE INFORMATION - Provide the site information necessary to gain an overview of the site and the relative complexity and extent of data requirements.
   - AREA - Indicate the area of the site in acres and an indication of the configuration (length and width)
   - DEPTH TO GROUND WATER - Indicate the depth to ground water from the ground surface, to the extent known identify seasonal fluctuation and the depth and thickness of multiple aquifers
   - GROUND WATER USE - Identify both potable and non-potable ground water use(s) by aquifer, if appropriate, and the point(s) of extraction relative to the site
   - SOIL TYPES - Identify, to the extent known, the site soil strata and relative depths below ground surface
   - SENSITIVE RECEPTORS - Identify population and environmental concerns, relative to the site, which could be impacted by contaminant migration

6. DATA TYPES - Circle the appropriate analytical and physical data required to to determine the type, degree, extent and migration characteristics of the contaminants and the required site characteristics. The selection of data types required must be developed by the site manager with the data users as described in section 3.2

7. SAMPLING METHODS - Circle the appropriate sampling method(s) to be used in obtaining the required data in accordance with the objectives above
   - ENVIRONMENTAL - Refers to media sampling of air, water, soils and the biological environment to determine the extent of contamination
   - SOURCE - Refers to the sampling of the actual contamination source(s)
   - BIASED - Refers to sampling which focuses on a specific site area, characteristic or problem factor based upon site knowledge and/or modeling
   - GRID - Refers to unbiased sampling which provides a representative estimate of contamination problem over the entire site
   - GRAB - Refers to discrete samples which are representative of a specific location at a specific point in time.
   - COMPOSITE - The mixture of a number of grab samples to represent the average properties of the parameters of concern over sthe extent of the area sampled
   - NON-INTRUSIVE - Refers to obtaining data using methods and equipment that do not require the physical extraction of sample from the media being sampled
   - INSTRUSIVE - Refers to physically extracting samples from the media being sampled
   - PHASED- Refers to performing discrete time-phased sampling events and using the information obtained in the previous event to refine the subsequent sampling event

8. ANALYTICAL LEVELS - The analytical levels are described in Section 9 of the Guidance
   - LEVEL 1 FIELD SCREENING - EQUIPMENT - Identify the field monitoring equipment to be used and the manufacturer's specified detection limits when known
   - LEVEL 2 FIELD ANALYSIS - EQUIPMENT - Identify the field analysis to be used and the historically achievable instrument detection limits
   - LEVEL 3 NON-CLP LABORATORY - METHODS -Identify the laboratory method(s) to be used and the historically achieveable precision and accuracy when available
   - LEVEL 4 CLP/RAS - METHODS - Identify the CLP laboratory method(s) to be used and the historically achievable precision and accuracy
   - LEVEL 5 NON-STANDARD - Specify requirement for non-standard analysis, analytical procedures to be used and required precision and accuracy

9. SAMPLING PROCEDURES - The procedures to be used in obtaining the required samples are to be defined, a description of the critical samples is to be provided and the requirement of obtaining a minimum of two background samples per sampling event is to be confirmed or the deviation from this minimum standard defined

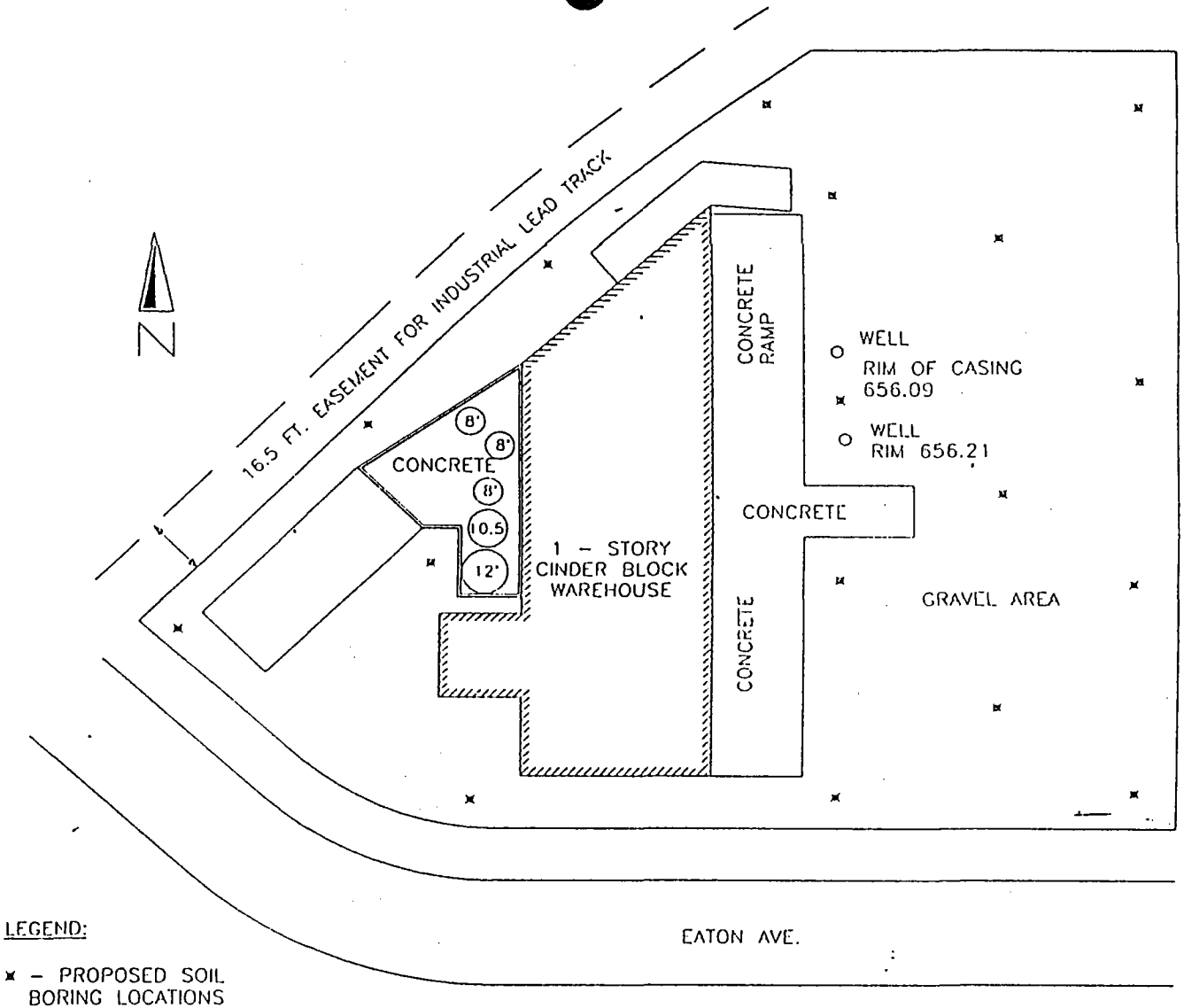
10. QUALITY CONTROL SAMPLES - The identified minimum standards for the field and laboratory quality control samples must be confirmed or revised on a site specific basis

11. BUDGET REQUIREMENTS - Based upon the analysis summarized above the critical resource requirements shall be defined
   - BUDGET - The estimated cost of the sampling and analysis shall be presented in dollars
   - SCHEDULE - The total time required to perform the sampling and the estimated time, as appropriate to perform the analysis shall be presented by calendar days, by phase
   - STAFF - The key staff disciplines required to perform the sampling shall be identified

The form shall identify the contractor directly responsible for the work the prime contractor and must be signed and dated by the site manager.

ATTACHMENT 4-6

PROPOSED SAMPLE LOCATION DIAGRAM



LEGEND:

× - PROPOSED SOIL BORING LOCATIONS

NOTE:

DIAGRAM BASED ON PLANS FROM TESTING ENGINEERS & CONSULTANTS, INC. OCTOBER 1992

PROPOSED BORING LOCATION DIAGRAM DETREX CORPORATION 12886 EATON AVENUE DETROIT, MICHIGAN	Date 5-23-94 Drawn By LAK Scale NTS Job PE21229	BAY CITY KALAMAZOO LANSING PLYMOUTH TOLEDO	soil and materials engineers, inc.

Figure No. 3

ATTACHMENT 4-7

BORING LOG EXAMPLE

SOIL AND MATERIALS ENGINEERS, INC.

JOB NAME:
B LOCATION:
WNER:

A/E:
BY: DATE:
JOB NUMBER:

BORING
SHEET: 1

WELL DIAGRAM	DEPTH (FEET)	SYMBOLIC PROFILE	DRILLER: / RIG: PROFILE DESCRIPTION — GROUND SURFACE ELEVATION =	SAMPLE TYPE, NUMBER & INTERVAL	STANDARD PENETRATION – (BLOWS/FOOT) 0 10 20 30 40 50	LEGEND — CONCENTRATION (mg/kg,ppm) 0 50 100 150 200 250
	5					
	10					
	15					
	20					
	25					
	30					
	35					

WATER LEVEL OBSERVATIONS

NOTES:
1. THE INDICATED STRATIFICATION LINES ARE APPROXIMATE IN SITU, THE TRANSITION BETWEEN MATERIALS MAY BE GRADUAL.
2. BORING BACKFILLED WITH NATURAL SOILS UNLESS OTHERWISE NOTED.

SECTION 5

HEALTH AND SAFETY PLAN/ CORRECTIVE ACTION PLAN

12886 EATON AVENUE
DETROIT, MICHIGAN

TABLE OF CONTENTS

SECTION 5

HEALTH AND SAFETY PLAN/CORRECTIVE ACTION PLAN

1. INTRODUCTION

1.1 Facility Description

This Health and Safety Plan (HASP) pertains specifically to the Detrex Corporation's Eaton Avenue facility, located at 12886 Eaton Avenue, in the City of Detroit, Michigan. The subject facility houses the Solvents and Environmental Services Division, which includes the following services: solvent reclamation; containerization and storage of reclaimed products.

The site is bordered to the north and west by a railroad easement, to the south by Eaton Avenue, and to the east by the Detroit Non-Ferrous Foundry, Inc.

Resources available on-site include potable water supply, electricity, telephone, restrooms, eye wash station/first aid equipment, and site specific air monitoring stations. The yard surrounding the facility is a combination of asphalt driveway and parking on the west side of the building, and gravel on the north and east sides of the facility.

2. HAZARDS EVALUATION

The tasks to be performed in the field during the RFI include: preparation of the location where the drill rig will be placed; placement of the drill rig; erection of the drill rig for operation; operation of the drill rig to conduct soil borings; and breakdown of the drill rig for transporting. These tasks will be repeated at each sampling location.

Underground and overhead electrical lines and piping will be cleared by Miss Dig personnel prior to conducting soil borings. Only qualified, trained personnel will be allowed to operate the drill rig.

The most likely chemicals to be encountered in the soils during drilling activities are: 1,2-dichloroethene; 1,1,1-trichloroethane; trichloroethene; 1,1,2-trichloroethane; and tetrachloroethene. Table 1 lists routes of entry and exposure symptoms for these chemicals.

TABLE 1

1.2-Dichloroethene

Routes of Entry: Inhalation, Ingestion, Contact

Exposure Symptoms: Irritation to eyes or respiratory system; central nervous system depression

1,1,1-Trichloroethane

Routes of Entry: Inhalation, Ingestion, Contact

Exposure Symptoms: Headache, lassitude, central nervous system depression, poor equilibrium; irritation to eyes; dermatitis; cardiac arrhythmias

Trichloroethene

Routes of Entry: Inhalation, Ingestion, Contact

Exposure Symptoms: Headache, vertigo; visual disturbance, tremors, somnolence, nausea, vomiting; irritation to eyes; dermatitis; cardiac arrhythmias, paresthesia.

1,1,2-Trichloroethane

Routes of Entry: Inhalation, Absorption, Ingestion, Contact

Exposure Symptoms: Irritation to eyes or nose; central nervous system depression; liver or kidney damage; suspected carcinogen

Tetrachloroethene

Routes of Entry: Inhalation, Ingestion, Contact

Exposure Symptoms: Irritation to eyes, nose or throat; nausea; flush face or neck; vertigo, dizziness, incoordination; headache, somnolence; skin erythema; liver or kidney damage; suspected carcinogen

These chemicals pose potential inhalation and dermal contact hazards. Risks associated with these potential routes of entry will be minimized by air monitoring and personal protective equipment routines outlined in Sections 3.3 and 3.5 below.

3. FIELD INVESTIGATION PERSONNEL

3.1 Training

Field personnel assigned to the site will be trained in the use of protective equipment; emergency response equipment; site-specific health and safety procedures; and site hazards consistent with 29 CFR, Part 1910, Subpart D (OSHA 40-trained) that may be present. Training will be conducted prior to starting work on-site and documented in project records.

Only authorized visitors who have completed the OSHA 40-hour Site Safety Training will be allowed to access the site in the are of investigation, while the investigation is underway. Soil and Materials Engineers, Inc. (SME) personnel, as well as any authorized visitors, will be provided a copy of the site-specific Health and Safety Plan to read and sign. In addition, personnel will be given a brief safety orientation by the Site Manager or Health and Safety Officer. On-site field personnel will be required to provide certification of having completed a 40-hour training course in accordance with OSHA 29 CFR 1910. Personnel employed at the Detrex facility have completed a 24-hour training course for the duties they perform as Detrex employees at the facility. Their duties will continue at the facility, although they will not be allowed access to the area of investigation while the investigation is underway.

3.2 Medical Surveillance

Personnel assigned to work at the site will be in good general health and able to wear necessary protective equipment. Subcontractors will provide certification as to the physical fitness of their personnel to conduct the work under this Health and Safety Plan. During project planning, a physician will be contacted, if appropriate, and informed of planned activity (including specific hazards) in order to determine if special medical surveillance is warranted.

3.3 Air Monitoring

Air monitoring will be performed to identify and quantify airborne contaminants in order to determine the necessary level of worker protection. A direct reading instrument, such as a Photoionization Detector (PID) Organic Vapor Analyzer, will be used to monitor the air for potential hazardous vapors which may occur. Both the HNU and

Photovac MicroTIP PIDs have an analytical range of 0.2 to 2,000 parts per million (ppm). The instrument will be calibrated daily per manufacturer's directions. The frequency of air monitoring will be determined by the field supervisor. Table 2 indicates the chemicals known to be present on-site and their industrial hygiene exposure limits.

If the air monitoring indicates a potential for the need of respiratory equipment, then compound specific Drager Tubes will be used to confirm ambient air concentrations to determine if respiratory protection is required and at what level.

The appropriate level of protection will be adopted to suit the level of Total Volatile Organics detected. The following ambient air contaminant levels will govern the usage of personnel protective equipment (PPE). The use of respiratory equipment will be governed by the "NIOSH Pocket Guide to Chemical Hazards".

TABLE 2

	SITE	**OSHA PEL**	**IDLH**
1,2 DCE (540-59-0)	145 ppb	200 ppm	4,000 ppm
1,1,1 TCE (71-55-6)	484 ppb	350 ppm	1,000 ppm
TCE (79-01-6)	812 ppb	50 ppm	1,000 ppm
1,1,2 TCA (79-00-5)	12.8 ppb	10 ppm	500 ppm
PCE (127-18-4)	527 ppb	100 ppm	500 ppm

OSHA PEL - OSHA Permissable Exposure Limits IDLH - Immediately Dangerous to Life and Health
ppb - Parts per billion
ppm - Parts per million

PID Reading sustained for ≥ 5 minutes	**Level of Protection (See Section 2.5)**

TABLE 2 (CONTINUED)

< 5 ppm	D
5 ppm to 25ppm	C
> 25 ppm to 500 ppm	B
> 500 ppm	A

3.4 Personal Hygiene

Safety rules will be observed. No eating, chewing, drinking, or smoking will be allowed near the work site. Employees will wash their hands thoroughly before lunch and breaks. Facilities will be provided off the work site for lunch and breaks. This is to include no eating, etc., in or on the work vehicles at the site.

3.5 Personal Protective Equipment

The areas of primary concern regarding potential personnel exposure to hazardous chemicals are entry via inhalation and skin absorption, including the eyes. The degree of protection will be commensurate with the potential for exposure. However, judgments will be made by the field supervisor to determine the potential benefit of protective equipment versus the risk of added health and safety hazards; i.e. heat stress, loss of dexterity, tripping hazards, etc. Professional judgment will be used to balance adequate employee protection versus increased physical hazards. The Site Manger or Health and Safety Officer will make this determination based on information in the Site Health and Safety Plan and their best professional judgment.

The following levels of protection are required for field work on the site. These have been patterned after those established by the U.S. Environmental Protection Agency (EPA) and Army Corps of Engineers. The specific level of protection required for different field tasks are listed below:

LEVEL D: MINIMUM LEVEL OF PROTECTION

Coveralls; safety boots/shoes; safety glasses or chemical splash goggles; hard hat.

Optional Equipment: Gloves; escape mask; face shield

LEVEL C: SKIN AND EYE PROTECTION

Full face air-purifying respirator; chemical resistant clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; two-way radio communication.

Optional Equipment: Coveralls; disposable boot covers; face shield; escape mask; long cotton underwear.

LEVEL B: INCREASED SKIN PROTECTION PLUS RESPIRATORY PROTECTION

Pressure-demand full-face SCBA or pressure-demand supplied-air respirator with escape SCBA; chemical resistant clothing; inner and outer chemical resistant gloves; chemical resistant safety boots/shoes; hard hat; two-way radio communications.

Optional Equipment: Coveralls; disposable boot covers; face shield; long cotton underwear.

LEVEL A: HIGHEST LEVEL OF RESPIRATORY, SKIN AND EYE PROTECTION

Pressure-demand full face SCBA or pressure-demand supplied-air respirator with escape SCBA, fully-encapsulating; chemical resistant suit; inner chemical resistant gloves; chemical-resistant safety boots/shoes; two-way radio communications.

Optional Equipment: cooling unit; coveralls; long cotton underwear; hard hat; disposable gloves and boot covers.

The level of protection for specific tasks and personnel are listed below:

Task	Personnel	Health & Safety Level of Protection
Drilling test borings	Drillers Geologist	D or C
Collecting & handling soil samples	Drillers Geologist	D or C
Decontamination of equipment	Drillers Geologist	D

Based on our knowledge of the site history and current level of activity, we expect to conduct the proposed field investigations using Level D or C protection. Level B protection will be activated if and when there is a potential threat for exposure from unknown contaminants during drilling or sampling. If the situation arises where Level A protection is deemed necessary, the area of concern will be evacuated and the situation assessed so that appropriate response measures can be taken.

3.6 Personal Decontamination Procedures

Personal decontamination procedures for on-site field personnel will include washing reuseable personal protective equipment with soap followed by a water rinse. In addition, equipment decontamination procedures will include steam cleaning, if necessary. Contaminated disposable field equipment will be collected and disposed of according to applicable Federal, state and local regulations.

3.7 Site Operations

Prior to initiation of site activities, appropriate work permits, utility clearances, etc., will be completed and compiled with in conjunction with plant personnel.

3.8 Activity Reports

A log book will be kept to document site activities including air monitoring results, site safety concerns, protective equipment used, and a site entry and exit sign-in log.

* Weather-related Safety Problems - Since activities to be performed on-site will require the use of drill rigs, operations will be ceased in any storm events that present the possibility of electrical discharge.

3.9 Emergency Response

The buddy system will be utilized at all times when site activities are being conducted. If an accident occurs, the affected person will be taken from the area if that person can be moved, for appropriate first aid. For inhalation exposures, personnel will be removed to fresh air, and medical aid will be administered if any symptoms appear (dizziness, etc.). If skin or eyes are affected, they will be washed with copious amounts of water, and medical attention will be sought. The appropriate emergency equipment,

such as fire extinguishers, first aid kits, etc., will be included in site equipment and available to field personnel.

Health and safety will be stressed to everyone conducting site related activities, and the Health and Safety Officer will have the responsibility of insuring that the Site Safety Plan is adhered to at all times. Field personnel also have the responsibility to be safety conscious and should report any unsafe conditions or acts that have the potential to affect site activities. If, at any time, personnel feel that a particular task is unsafe and precautions have not been adequately covered in the Site Safety Plan, that fact should be brought to the attention of the Site Manager or Site Safety Officer immediately.

The nearest hospital with emergency services is Grace Hospital, located approximately 2.5 miles north of the facility. The emergency phone number is (313) 966-3045. From the facility, the most direct route is Schaeffer Highway north to West Outer Drive east. The hospital is located approximately five blocks east of West Outer Drive, on Margareta Street.

3.10 Key Personnel

The primary and alternate personnel responsible for site safety response operations, along with positions and telephone numbers are as follows:

Name	Position	Phone (Office)	Phone (Home)
Robert Nowakowski	Project Manager (SME)	(313) 454-9900	(810) 779-5189
Laura Badalamenti	Health Safety Officer (SME)	(313) 454-9900	(313) 347-4312
Bill Moore	Corporate Manager Environmental Compliance (Detrex)	(313) 358-5800	(810) 879-8817
Ron Swan	Manager, Corporate Engineering (Detrex)	(313) 358-5800	(313) 728-8497

4. COMMUNITY HEALTH AND SAFETY

This investigation will be conducted within the site boundaries and does not present health or safety risks for the community at large. An initial briefing of local health officials on investigation activities will be conducted by Detrex personnel to assess community health and safety risks. Detrex will inform the public of activities to be

conducted during implementation of the RFI workplan. This may include holding informal meetings or distributing newsletters to inform and keep the public informed during the RFI process. An information repository, containing documents related to the RFI, will be kept in a convenient public facility, such as the local library, so the public can review relevant information on corrective action activities.

Health and safety risks for the community will be reevaluated under the Corrective Measures Study to determine the effects of proposed remedial actions on community health and safety.

SECTION 6

DRAFT ECOLOGICAL ASSESSMENT

DETREX CORPORATION
MID 091 605 972

TASK I - ATTACHMENT IV

TABLE OF CONTENTS

SECTION 6

DRAFT ECOLOGICAL ASSESSMENT

TASK 1 - ATTACHMENT IV

1. INTRODUCTION

The preliminary Ecological Assessment is being written as part of the Federal Hazardous Waste Permit Conditions (Detrex Corporation, Solvents and Environmental Services Division, Detroit, Michigan, MID 091 605 972). Specifically, this assessment addresses the permit conditions outlined in Task I of Attachment IV. The following sections include the information as required by the task.

2. DESCRIPTION OF THE BIOTA IN SURFACE WATER BODIES ON, ADJACENT TO, OR AFFECTED BY THE FACILITY

The Detrex facility (Facility) is located in a predominantly industrial area that is heavily developed, with little land area being unused. Surface water bodies, such as lakes, ponds, rivers or creeks, are not present in the area. The closest body of water is the Rouge River, which is located approximately 2.5 miles southwest at its nearest point. Given this information, it is not expected that biota related to surface water are present on, adjacent to, or will be affected by the facility.

3. DESCRIPTION OF THE ECOLOGY OVERLYING AND ADJACENT TO THE FACILITY

On the Facility property, the flora consists primarily of sparsely distributed, pioneer-type plant species. Those plants identified include, but are not limited to the following:

General Name	Scientific Name
cottonwood	Populus deltoides
box elder	Acer negundo
Chinese elm	Ulmus parvifolia
Virginia creeper	Parthenocissus quinquefolia
grasses	Gramineae (family)

milkweed	Asclepiadaceae (family)
goldenrod	Solidago (genus)
chicory	Cichorium intybus
morning glory	Convolvulaceae (family)

The plant life on the facility does not support an animal habitat.

Adjacent to the Facility on all sides lie industrial properties, which exhibit similar flora to the facility.

4. DESCRIPTION OF ANY ENDANGERED OR THREATENED SPECIES NEAR THE FACILITY

The Michigan Department of Natural Resources (MDNR) was contacted regarding the presence of endangered or threatened species at or near the Facility. According to the MDNR, there are no known species that are endangered or threatened. A letter has been sent to the local U.S. Fish and Wildlife Office in East Lansing, Michigan, requesting a written response as to the occurrence of any endangered species in the area of the facility. The letter was sent to the U.S. Fish and Wildlife Office on June 6, 1994. The results of their response to our request will be forwarded to the U.S. EPA as they become available.

5. IDENTIFICATION OF FACILITY-SPECIFIC CONDITIONS PERTINENT TO THE EVALUATION OF FATE AND TRANSPORT PROCESSES OCCURRING AT THE SITE

The portion of the Facility consumed by building, loading, and active areas arecovered by concrete paving (primarily the west half of the property). In addition,these areas are curbed to contain a spill should one occur. The topography of these areas is also primarily flat, and it is not expected that erosion of concrete or soils will occur due to precipitation and/or a spill. See Attachment 6-1 for a topographic survey of the site.

The remainder of the property, outside the areas described above, is sloped slightly (less than .019 feet/foot gradient) to allow for some drainage. No appreciable erosion of soil is expected.

The areas of contaminated fill, the amount of contamination, and the potential fate and transport of contaminants in the environment are not available at this time. As this

information becomes available at the completion of the subsurface investigation, it will be forwarded to the U.S. EPA.

6. IDENTIFICATION OF POTENTIAL AND PROBABLE EXPOSURE POINTS FOR ECOLOGICAL RECEPTORS

The storage and receiving areas are located within an enclosed building and/or curbed to provide adequate secondary containment. The ecological receptor which could be impacted should these secondary systems fail is the gravel area (identified as Section A-A of the Topographic Map) on the eastern portion of the site. This gravel area supports pioneer-type plant species. However, should proper attention be paid to site security, routine inspection and maintenance, proper containment of waste materials and strict adherence to applicable State and Federal regulations, the potential for ecological impact is negligible.

The areas of contaminated fill, the amount of contamination, and the potential fate and transport of contaminants in the environment are not available at this time. As this information becomes available at the completion of the subsurface investigation, it will be forwarded to the U.S. EPA. Information obtained from sampling activities at the site to fully characterize existing facility conditions, including the extent of contamination, will be utilized in preparing a draft Ecological Assessment Report. This report will contain the information outlined in Task 3 of Attachment IV of the Federal permit.

PID readings will be taken onsite during field activities to monitor the breathing zone for total volatile organics as part of the health and safety plan. In addition, air quality monitoring routinely performed at the facility will be used to identify potential exposures from fugitive volatile organic emissions.

7. IDENTIFICATION OF KNOWN OR OBSERVED EFFECTS OF FACILITY CONTAMINANTS TO BIOTA, SUCH AS FISH KILLS OR OTHER OBVIOUS IMPACTS

No known affects or impacts to biota in the area have been identified. The region where the facility is located is a historically heavily-industrialized zone.

8. INITIAL TOXICITY ASSESSMENT OF FACILITY CONTAMINANTS

Given the information presented above (i.e., lack of biota, limited receptive areas, and fauna, etc.), this Initial Toxicity Assessment is directed toward human exposure.

The Facility processes primarily methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, and trichlorotrifluoroethane. Each of these compounds is an industrial solvent, is colorless, and easily evaporates into the air.

Based on the physical characteristics of the compounds, inhalation is the primary route of exposure. Minimal concern is directed toward exposures to the skin. Normal practices require the use of proper personal protective equipment during handling. In addition, exposure is limited due to the evaporation rate.

Exposure through inhalation of these compounds can cause detrimental effects to the central nervous system. Symptoms from short term exposure include dizziness, loss of balance and coordination, sluggishness, light-headedness, headaches, and nausea. Acute exposure to high doses include eye, noes, and throat irritation. These symptoms represent warning sighs that personnel should take notice of to avoid long-term exposure and subsequent long-term health effects.

In addition to the concerns listed above, the compounds methylene chloride and tetrachloroethyleneare classified as carcinogens through inhalation andtrichloroethylene has been classified as a suspected carniogen. Methylene chloride has been found to produce lung and liver damage in laboratory animals. Trichloroethylene affects the lungs, and tetrachloroethylene affects the liver and can lead to leukemia.

Facility practices regarding the use of personal protective equipment to minimize dermal exposure are discussed in Detrex's Contingency Plan, which is provided in Attachment 6-2. The Contingency Plan also discusses the Detrex's Eaton Facility air monitoring program for assessment of exposures to human health and the environment from air emissions resulting from facility operations.

9. EVALUATION OF THE NEED FOR MORE DATA AND FURTHER INVESTIGATIONS TO COMPLETE THE ECOLOGICAL ASSESSMENT

Based on the information collected and presented above, an additional investigation described as Task 2 of Attachment 6-4 of the RFI permit into the ecological conditions does not appear necessary. Information obtained from sampling activities at the site to fully characterize existing facility conditions, including the extent of contamination, will

be utilized in preparing a draft Ecological Assessment Report. This report will contain the information outlined in Task 3 of Attachment IV of the Federal permit.

ATTACHMENT 6-1

SITE TOPOGRAPHY MAP

MULTI-COLOR IM 7-42 METEP

SECTION B-B
NTS

SECTION C-C
NTS

SECTION D-D
NTS

SECTION E-E
NTS

SECTION A-A

EASEMENT FOR ROADWAY AS RESERVED IN DEED RECORDED IN L. 10581, P. 206.

EASEMENT FOR SPUR TRACK L. 10581, P. 206

EASEMENT RESERVED FOR PRIVATE RAILROAD SIDING & RAILROAD PURPOSES AS CITED IN DEED REC. IN L. 5902, P. 226

EASEMENT FOR INDUSTRIAL LEAD TRACK

1-STORY BRICK BLDG.

1-STORY CINDER BLOCK INDUSTRIAL BUILDING

1-STORY CINDER BLOCK WAREHOUSE

1-STORY CINDER BLOCK GARAGE ASPHALT SHINGLE ROOF

1-STORY BRICK & BLOCK WAREHOUSES

1-STORY

OFFICE

DOCK

GRAVEL AREA

EATON AVE. 60' WD.

S.E. CORNER OF LOT 9

RIM OF CASING 656.09

WELL

TEST BORING #1

TEST BORING #2

BENCH MARK: "D" IN DETROIT ELEV. = 657.64 (USGS) DATUM

R & M. 99.18 N. 89°23'00" W.

R & M. 0.89 S. 65°40' W.

R & M. 224.90 DUE NORTH

R & M. 63.22 S. 25°00'00" E.

R & M. 181.38 S. 89°35'00" E.

RAD. 359.26 ARC 147.35 CHORD 146.32 CH. BRG. S. 53°30'00" W.

RAD. 359.26 ARC 41.30' CHORD 41.28 CH. BRG. S. 38°52'23" W.

R & M. S. 42°10'00" W. 55.00

FENCE 0.80' EAST

FENCE POST ON LINE N. & S.

SET 5/8" I.P.

SET P.K. NAIL

SET 5/8" I.P. WITH CAP 0.40' ABOVE GROUND (Possibly dead gas service) 3' ABOVE GROUND

POSTS FILLED W/CONCRETE FOUND 5/8" I.P. 0.10 NORTH

12" SQUARE 6" DEEP SUMP

2-1/2" GAS SERVICE

4" GAS MAIN (LOCATION PER MICH. CONSOLIDATED GAS COMPANY RECORDS)

20" COMBINED SEWER

24" COMB. SEWER

18" COMB.

12" COMB. SEWER

MANHOLE RIM 653.86 INV. 643.66

MANHOLE RIM 652.71 INV. 639.40

MANHOLE RIM 653.27 INV. 642.03

MANHOLE RIM 652.37

CATCH BASIN

HYDRANT

WATER SHUT-OFF

6" WATER MAIN

D.E. POLE

DETROIT EDISON POLE

OVERHEAD D.E. & M.B.T. LINES

M.B.T. SERVICE

MICH. BELL TEL. SERVICE

STEEL STORAGE TANKS

CONCRETE RAMP

CONCRETE

BLOCK WALL

CHAIN LINK FENCE

SANITARY CLEAN-OUT

TILE FLOOR

TILE PAD

CONC. FLOOR

METAL STAIRWAY TO ABD.

BUILDING WALL

DOORWAY OPENING

CONC. STEPS

CONC. RAMP

LEVEL

NOTE: BUILDING WALLS ARE 0.67' WIDE.

NOTE: THE WAYNE COUNTY AIR POLLUTION CONTROL OFFICE (224-4650) REPORTS, THROUGH THEIR METEOROLOGIST, DAVID DERENZO, THAT THE PREVAILING WINDS ARE OUT OF THE SOUTHWEST. THIS INFORMATION IS BASED ON NATIONAL WEATHER SERVICE RECORDS ON FILE IN THEIR OFFICE.

LEGEND

GROUND ELEVATION CONTOUR

DIRECTION OF SURFACE WATER RUNOFF FLOW

NOTE: ELEVATIONS SHOWN ARE BASED ON U.S.G.S. DATUM. TO OBTAIN CITY OF DETROIT DATUM SUBTRACT 480.27 FROM ELEVATIONS SHOWN. TO OBTAIN U.S.C. & G.S. DATUM DATUM SUBTRACT 0.51 FROM ELEVATIONS SHOWN:

CHALFONTE AVE.

HILLVIEW AVE.

EATON AVE.

LYNDON AVE.

WARD AVE.

SORRENTO AVE.

STEEL AVE.

APPOLINE AVE.

SNOWDEN AVE.

LITTLEFIELD AVE.

CHEYENNE AVE.

MEYERS ROAD

TO FENKELL AVE

TO SCHAEFER AVE

TO WYOMING AVE.

TO SCHOOLCRAFT RD

HILL UNION BELT DEVELOPMENT SUB'N

LIVINGSTON-COOLIDGE SUB'N

GEO. ARRIS SUB'N

VISHOE PARK SUB'N

16 17 SURVEY SITE

BUILDING

FOREST HILL CEMETERY

PARKS & RECREATION SITE

BUTZEL PARK

VICINITY MAP

SCALE: 1" = 200'

LEGAL DESCRIPTION

...TION BELT DEVELOPMENT SUBDIVISION", BEING THE N. 1/2 OF THE ...1/4 OF SEC. 20, T. 1 S., R. 11 E., CITY OF DETROIT, WAYNE COUNTY, ...PLAT THEREOF RECORDED IN THE OFFICE OF THE REGISTER OF ...MICHIGAN IN LIBER 60 OF PLATS ON PAGE 62;

...EVER TO A PERMANENT EASEMENT HERETOFORE GRANTED TO THE PENNSYLVANIA, ...T RAILROAD OVER A STRIP OF LAND ON THE N'LY SIDE OF SAID LOTS FOR AN ...ROAD TRACK AS PER DEED RECORDED IN L. 2298 OF DEEDS ON P. 176-178 WCR,

...IVING TO THE SELLERS, THEIR HEIRS AND ASSIGNS, AN EASEMENT OVER AND ACROSS ...THE N.'LY AND N'LY REAR PORTIONS OF SAID LOTS 16 & 17 DESCRIBED AS "ALL THAT PORTION OF SAID LOTS LYING N'LY AND N.W'LY OF A LINE EXTENDING ACROSS SAID LOTS, THAT IS 8... FEET S'LY OF THE CENTER OF THE RAILROAD SIDING AS PRESENTLY INSTALLED AND IN USE, ...CONNECTING WITH THE TRACK OF THE PENNSYLVANIA, OHIO AND DETROIT RAILROAD COMPANY; ...THE SAID EASEMENT TO COVER THE RIGHT TO USE THE SAME FOR PRIVATE RAILROAD SIDING AND ...RAILROAD SERVICE OVER SAME TO THE SAID PENNSYLVANIA, OHIO AND DETROIT RAILROAD, ...JOINTLY WITH ALL OTHER OWNERS OF LOTS 18, 19, 20, 21, 22, 23 AND 24 OF HILL UNION ...BELT DEVELOPMENT SUBDIVISION AFORESAID, SO THAT RAILROAD SERVICE MAY BE HAD BY ALL ...OTHER OWNERS ALONG THE LENGTH OF THE SIDING AS NOW INSTALLED AND IN USE;

NOTE:

ABOVE DESCRIPTION IS FROM DEED TO DETROIT REX PRODUCTS COMPANY DATED DEC. 30, 1941, RECORDED JANUARY 8, 1942 IN LIBER 5902, DEEDS, PAGE 226.

CERTIFICATION

WE HEREBY CERTIFY THAT WE HAVE SURVEYED THE PROPERTY HEREON, DELINEATED AND THAT THE DISTANCES SHOWN ARE TRUE AND CORRECT BY ACTUAL FIELD MEASUREMENTS AND THAT THERE ARE NO ENCROACHMENTS UNLESS OTHERWISE SHOWN.

DATE: July 11, 1985

WARNER, CANTRELL & PADMOS, INC.

BY: Donald A. Beaupied

DONALD A. BEAUPIED, REG. LAND SURVEYOR #11512

ATTACHMENT B-2

DATE: July 11, 1985

REVISIONS: JULY 26, 1985 — ADD TEST BORING & WELL LOCATION INFO.
APRIL 10, 1989 — UPDATED FOR TRUCK WELL & PAVEMENT CONSTRUCTION
APRIL 24, 1990 — ADD'D CROSS SECTIONS D-D & E-E (NEW TANK AREA WALLS)
B.P.C.C. 4-23-91

PLAN OF SURVEY OF LOTS 16 & 17 OF "HILL UNION BELT DEVELOPMENT SUBDIVISION" BEING THE N. 1/2 OF THE S.E. 1/4 OF THE N.W. 1/4 OF SEC. 20, T. 1S., R. 11 E., CITY OF DETROIT, WAYNE CO., MICH. (L. 60, P. 62)

SCALE: 1" = 20' DATUM: U.S.G.S. (SEE NOTE ABOVE)

WARNER, CANTRELL & PADMOS, INC.
CIVIL ENGINEERS AND LAND SURVEYORS
20788 ORCHARD LAKE RD.
313-478-9494 FARMINGTON HILLS, MI. 48336

JOB NO.

PLAN FILE

N. B. 614

SHEET 1 OF 1

ATTACHMENT 6-2

CONTINGENCY PLAN

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SECTION G
CONTINGENCY PLAN

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LIST OF ATTACHMENTS

SECTION G

CONTINGENCY PLAN

This contingency plan has been prepared for the Detrex Corporation facility in Detroit, Michigan. The contingency plan has been designed to minimize hazards to human health or the environment and describes the actions facility personnel will take in response to fires, explosions, or any unplanned sudden or nonsudden release of hazardous waste or hazardous waste constituents at the facility.

The information is provided pursuant to Michigan Act 64 Rule 299.9607 which incorporates 40 CFR Part 264 Subpart D by reference. The applicable section(s) of the Federal Regulations (40 CFR) is referenced as appropriate.

G-1 GENERAL INFORMATION [40 CFR §270.14(b)(7), Part 264, Subpart D

Detrex Corporation owns a solvent sales and recovery (recycling) operation and transfer facility, operated in Detroit, Michigan. The street location and mailing address for the facility is:

Detrex Corporation
12886 Eaton Avenue
Detroit, Michigan 48227
Telephone: (313) 491-4550

This facility is a warehouse for virgin halogenated hydrocarbon solvents and a recovery (recycling) facility for spent solvents that are recovered via distillation. The facility also operates a transfer facility under 40 CFR. The facility is classified as as treatment, storage, disposal (TSD) facility and operates under EPA identification number MID 091605972.

The hazardous waste management operations include container storage and tank storage. Wastes are received in drum or bulk shipments. The wastes are processed through the recovery (recycling) system which primarily consist of distillation followed by drying. The recovered solvent product is drummed or stored in product tanks for re-sale and the still bottoms remaining after distillation are transferred to a 5,000 gallon generator accumulation tank. The still bottoms are accumulated for less than 90 days prior to shipment off site to a permitted facility. The entire operation is located within a single enclosed building. Attachment G-1, is a facility plan locating the hazardous waste container and tank storage areas, process equipment, and the transfer facility.

The facility processes hazardous waste classified under EPA Hazardous Waste Numbers F001 and F002. D-series compounds are also recognized to be present within the wastes. Table G-1 lists all of the wastes permitted to be received at the facility. Material Safety Data Sheets for all materials handled at the facility are found in Attachment G-2.

The facility employs eight personnel involved in various activities. A sign in/sign out sheet is maintained in the office by the secretary to identify the employees or visitors on-site at a given time.

This contingency plan contains emergency provisions to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents for the entire facility.

TABLE G-1

LIST OF HAZARDOUS WASTES
STORED IN FACILITY

Hazardous Waste	*EPA Hazardous Hazardous Waste Number*	*Hazardous Constituent/Characteristic*
1,1,1 Trichloroethane	F001/F002	Toxic
Trichloroethylene	F001/F002	Toxic
Methylene chloride	F001/F002	Toxic
Perchloroethylene	F001/F002	Toxic
Trichlorotrifluoroethane (Freon)	F001/F002	Toxic
Arsenic	D004	Toxic
Barium	D005	Toxic
Cadmium	D006	Toxic
Chromium	D007	Toxic
Lead	D008	Toxic
Mercury	D009	Toxic
Selenium	D010	Toxic
Silver	D011	Toxic
Benzene	D018	Toxic
Carbon Tetrachloride	D019	Toxic
Chlorobenzene	D021	Toxic
Chloroform	D022	Toxic
1,4-Dichlorobenzene	D027	Toxic
1,2-Dichloroethane	D028	Toxic
1,1-Dichloroethylene	D029	Toxic
2,4-Dinitrotoluene	D030	Toxic
Hexachloroethane	D034	Toxic
Methyl Ethyl Ketone	D035	Toxic
Nitrobenzene	D036	Toxic
Pyridine	D038	Toxic
Tetrachloroethylene	D039	Toxic
Trichloroethylene	D040	Toxic
Vinyl Chloride	D043	Toxic

G-2 EMERGENCY COORDINATORS [40 CFR §264.52(d) §264.55]

If an imminent or actual emergency is discovered, the Emergency Coordinator (either on the facility premises or on call) will be immediately notified. The primary Emergency Coordinator will be contacted first; if he is not available, the alternates will be contacted (in the order listed) until one is reached. The primary Emergency Coordinator and the alternates listed in the order they are to be contacted are listed in Table G-2 with their job title, contact numbers and home addresses.

The employee who discovers an imminent or actual emergency shall take responsibility for notifying the Emergency Coordinator or an alternative. At least one of the designated Emergency Coordinators will either be at the facility or on call and available to come to the facility, to respond to an emergency seven (7) days per week.

The Emergency Coordinator is thoroughly familiar with all aspects of the contingency plan, all operations and activities at the facility, the location and characteristics of wastes handled, the locations of all records within the facility, and the facility layout. The Emergency Coordinator has the authority to commit the resources necessary to implement the contingency plan. The Emergency Coordinator coordinates and directs all response efforts and personnel.

In the event that the Detroit Fire Department (DFD) responds to an emergency at the facility, the DFD Supervisor assumes the duties and authorities of the Emergency Coordinator. The Supervisor and the Emergency Coordinator then act together to coordinate and direct the response effort. The plant Emergency Coordinator's principal authority is to effectively provide the DFD Supervisor with comprehensive and detailed information concerning plant operations and the location and characteristics of materials handled.

A listing of the emergency response agencies and organizations which may be called upon to provide emergency assistance at the facility is provided in Table G-3 with their appropriate contact numbers.

At present, the local Police and Fire Departments and the local Hospital have a copy of the contingency plan.

TABLE G-2

EMERGENCY COORDINATORS

Name	*Job Title*	*Work Phone*	*Home Phone*	*Home Address*
<u>Primary</u>				
Ronald Hritzkowin	Operations Manager	(313) 491-4550	(313) 354-0930	23589 Lahser Southfield, Michigan 48035
<u>Alternate</u>				
Levi Douglass	Warehouse Manager	(313) 491-4550	(313) 863-0586	18615 Muirlend Detroit, Michigan 48221
Joseph Calderoni	Quality Control Coordinator	(313) 491-4550	(313) 728-2117	643 Forest Westland, Michigan 48185

TABLE G-3

EMERGENCY RESPONSE AGENCIES/ORGANIZATIONS

Name	*Phone Number*
Police Department	911
Fire Department	911
Grace Hospital	(313) 966-3300
National Response Center	800-424-8802
Detrex Corporation Risk Management Group	(313) 358-5800
Michigan Department of Natural Resources, Michigan Pollution Emergency Alerting System	800-294-4706
Emergency Spill Clean-Up Companies	
- Marine Pollution Control	(313) 849-2333
- Environmental Waste Control Inc.	(313) 561-1400
- K&D Industrial Services Inc.	(313) 326-3550

G-3 IMPLEMENTATION OF CONTINGENCY PLAN
[40 CFR §264.52(a) §264.56(d)]

The provisions of this contingency plan must be carried out immediately whenever there is an imminent or actual incident, such as fire, explosion, or release of hazardous waste or hazardous waste constituents which could adversely threaten human health or the environment. Minor leaks or spills in the hazardous waste container or tank storage areas would not normally trigger the implementation of the Contingency Plan, but would be managed by the Emergency Coordinator or his alternate. This section of the Contingency Plan offers the Emergency Coordinator guidelines to evaluate the need to implement the Contingency Plan.

The contingency plan will be implemented in the following situations:

A. Fire and/or Explosion

1. A fire causes the release of toxic fumes.

2. The fire spreads and could possibly ignite materials at other locations on site or could cause heat-induced explosions.

3. The fire could possibly spread to off-site areas.

4. Contamination could spread from the use of water or water and chemical fire suppressants external to the facility.

5. An explosion has occurred or an imminent danger exists that an explosion could occur at the facility.

B. Spill or Material Release

1. The spill (minor or major) could result in release of toxic liquids or vapors, thus causing a fire or gas explosion hazard or health hazard.

2. A minor or major spill that could result in soil and/or groundwater contamination.

G-4 EMERGENCY RESPONSE PROCEDURES [40 CFR §264.56]

G-4a Notification/Identifications/Assessment/Reporting [40 CFR §264.56]

In the event of an emergency, the Emergency Coordinator or his alternate will be contacted immediately and will:

1) If it is an imminent or actual emergency, involving sudden or non-sudden release, by fire, explosion or otherwise so as to threaten human health or the environment, the Emergency Coordinator will immediately warn facility personnel and appropriate emergency response authorities. The procedures listed below with regards to appropriate notification of the proper authorities shall be followed as soon as possible once the safety of personnel is assured.

2) Determine the origin, location, nature and extent of the problem;

3) Establish a command post from which to coordinate and direct the overall emergency response effort (The command post would likely be the main facility office where a telephone and a copy of this Contingency Plan are available);

4) Inform other personnel of the situation;

5) If it is a localized situation, not involving sudden or non-sudden release, by fire, explosion or otherwise, of hazardous waste or hazardous waste constituents so as to threaten human health or the environment, handle the matter according to routine procedures;

Notification

1. Notify appropriate national, state, and/or local departments, agencies and organizations with designated response roles, including the Risk Management Group of Detrex Corporation (See Table G-3.)

2. When notifying response teams, the Emergency Coordinator should be prepared to furnish the following information:

   a) Name and telephone number of reporter:
   b) Name and address of facility:
   c) Time and type of incident (e.g. release, fire):
   d) Name and quantity of material(s) involved and to what extent:
   e) The extent of injuries if any, and:

f) The possible hazards to human health or the environment outside of the facility.

Identification

Identify the character, exact source, amount and areal extent of any released materials. This may be accomplished by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

Assessment

Assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment shall consider both direct and indirect effects of the release, fire, or explosion, including the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water runoff from water or chemical agents used to control fire and heat-induced explosions.

The procedure for assessing possible hazards includes:

1. Identification of hazardous properties of the materials involved or by-products thereof.

2. Determination of threat to human health or the environment, both on site and off site.

3. Assess any environmental conditions (e.g. windspeed and direction) that may contribute to the seriousness of the hazard.

4. Determine the readiness and availability of response equipment, both on site and off site.

Reporting

If the Emergency Coordinator determines that the release, fire, or explosion could threaten human health or the environment outside the boundaries of the facility, he shall:

1) If his assessment of the emergency indicates that evacuation of the surrounding local areas may be advisable, immediately notify the Detroit Fire Department and Detroit Police Department at 911 and any other appropriate authorities as deemed necessary including the National Response Center.

2) Immediately contact all other appropriate departments, agencies and organizations with designated response orders and relate to them the specific information they require to respond (see Notification).

G-4b Control Procedures [40 CFR §264.52(a)]

Potential accidents are classified into three general areas:

1) Fire and/or explosion involving hazardous waste or hazardous waste constituents;

2) Accidental release in a liquid form of hazardous waste or hazardous waste constituent; and

3) Accidental release in the form of a vapor of hazardous waste or hazardous waste constituent.

G-4b(1) Fire and/or Explosion

The hazardous waste container and tank areas are accessible by fire-fighting and other emergency equipment. Response procedures in the event of a fire and/or explosion will be as follows:

1) Plant personnel will notify the office via telephone.

2) The Emergency Coordinator will be notified.

3) If a fire is minor, facility fire-fighting equipment such as fire extinguishers and fire hoses would be used, to extinguish the fire.

4) If a fire and/or explosion is major, the Detroit Fire Department will be contacted at 911, as well as other authorities as deemed necessary.

5) Any operating units such as process equipment, boilers, pumps, etc., would be shut down using main disconnect.

6) In the event that Step 3 fails to control the fire, Steps 4 and 5 will be implemented and all employees will immediately vacate the premise. Personnel will meet and be accounted for at the parking lot in front of the facility.

7) The Emergency Coordinator has the authority to direct other necessary actions as required.

8) An "all clear" signal will be given over the facility public address system when the fire and/or explosion has been extinguished and the personnel's safety is no longer endangered.

9) After a fire and/or explosion has been extinguished, clean-up procedures will commence. All emergency equipment used must be replaced, repaired, recharged or otherwise be in good operating condition and placed in the appropriate location before normal operations resume.

G-4b(2) Accidental Release, Liquid

If an accidental release of liquid occurs which cannot be controlled with absorbent material, the following steps will be taken:

1) Plant personnel will notify the office via telephone.

2) The Emergency Coordinator will be notified. Appropriate Emergency Response Agencies (i.e. Emergency Spill Cleanup) as listed in Table G-3 will be notified as deemed necessary.

3) The exact source and type of release of hazardous waste or hazardous waste constituent will be determined.

4) All pump(s) contributing to the release will be shut off.

5) Any section(s) of pipe contributing to the release will be isolated by closing the appropriate valves.

6) If the discharge is from a drum, the drum will be turned to orient the leak towards the top.

7) If the discharge is from a tank, the exact source of the discharge will be located and, if possible, isolated (i.e., leakage from a valve which is piped to the tank, packing or flanges may be adjusted to stop the leak).

8) A temporary dike of absorbent material will be placed around the discharge area.

9) Emergency ventilation fans will be activated and doors to the outside will be opened.

10) Plant personnel will be evacuated from building, if deemed necessary. Personnel will meet and be accounted for at parking lot in front of the facility.

11) Clean-up procedures, which may include notification of a spill clean-up firm, furnishing the clean-up crew with physical and/or chemical properties of waste and amount of waste released, shall be implemented.

a) Clean-up of released waste: The waste will be collected via use of absorbent material for small spills. The collected material will then be placed in DOT-approved containers and stored in a segregated area of the container storage area. The containers will be clearly labelled describing the source of the material. The material will subsequently be characterized as F001 or F002 material based on the source of the spilled material. The material would then be transported to an off-site facility permitted to receive the material in accordance with all state and federal regulations. For large spills, the waste will be collected with a wet-vac or pump and placed into DOT-approved containers in the container storage area. The waste would be characterized based on the source of the spilled material and subsequently be reclaimed (recycled) on-site. Residual material would be handled as described above for small spills.

b) Decontamination: Following cleanup with absorbent material, the affected area of the secondary containment area will be swept and all sweepings will be containerized and handled as identified above for small spills. The pad may be subsequently decontaminated by steam cleaning. Any wash waters generated will be collected in DOT-approved containers and transported off site for treatment/disposal at a permitted facility as described above unless the material meets the specifications for discharge in accordance with the facility's Detroit Water and Sewerage Department Wastewater Discharge Plant.

c) Cleanup of Contamination Soil: Should the spill or release occur outside the secondary containment area (i.e. external to the building and the loading/unloading area), cleanup will be accomplished by a firm specializing in such procedures. All visually contaminated soil, where practical, will be excavated

and placed in a temporary accumulation containers (i.e., drum, lugger box) pending characterization for ultimate disposal. The base of the excavation would subsequently be sampled to ensure all contaminated soil has been removed. Analysis of soil samples for volatile organic compounds utilizing U.S. EPA Method 8240 (SW-846) would be conducted. Any soils exhibiting detectable levels of volatile organic compounds would be excavated and the new base of excavation re-sampled. All excavated material would subsequently be characterized as F001 or F002 material, based on the characterization of the spilled material, for secure disposal at a permitted off-site facility.

12) Emergency equipment used, must be replaced, repaired, recharged or otherwise be in good operating condition and placed in the appropriate location before operations resume.

G-4b(3) Accidental Release, Vapor

Steam to the distillation unit will be shut off immediately (cooling water will remain on to condense vapors in the distillation unit).

1) Plant personnel will notify the office via telephone.

2) The Emergency Coordinator will be notified.

3) Emergency exhaust fans will be activated and all doors to the outside will be opened.

4) If major, the local fire department will be called by telephone. Any operating units such as boilers, air conditioning or heating systems, pumps, etc. will be shut down immediately. Personnel will be evacuated from the building and will meet at the parking lot in front of the building to be accounted for. Appropriate Emergency Response Agencies as listed in Table G-3 will be notified as deemed necessary.

5) Clean up procedures will be initiated.

G-4c Prevention of Recurrence or Spread of Fires, Explosions or Releases [40 CFR§264.56(e)]

Actions to prevent the recurrence or spread of fires, explosions or releases may include:

1) Halting processes and operations.

2) Collecting and containing released wastes.

3) Prohibiting smoking in all areas except designated smoking areas.

4) Using non-sparking tools.

5) Protecting the area from open flame or heat generating activities.

6) Monitoring all valves, pipes or equipment for leaks or ruptures.

All reasonable safety procedures will be followed prior to resuming operations.

G-4d Storage and Treatment of Released Material [40 CFR§264.56(g)]

Immediately after an emergency, the Emergency Coordinator will make arrangements for proper treatment, storage and/or disposal of all water and contaminated materials resulting from the release, fire or explosion. All resulting wastes generated will be considered a RCRA hazardous waste and managed as a RCRA waste unless it can be demonstrated to be non-regulated.

G-4e Incompatible Wastes [40 CFR§264.56(h)(l)]

The Emergency Coordinator will insure that wastes, which may be incompatible with the released material, are treated, stored, or disposed until cleanup procedures are completed.

G-4f Post-Emergency Equipment Maintenance [40 CFR§264.56(h)(2)]

After an emergency event, or as required during the emergency response, all emergency equipment utilized in the affected area will be cleaned, or replaced, so that they are suitable for future use. Prior to resuming operations, an inspection of all utilized safety equipment will be conducted. All proper authorities will be notified that the post-emergency equipment maintenance has been performed and operations will resume.

G-4g Container Spills and Leakage [40 CFR §264.52, §264.171]

The procedures to be implemented when responding to a spill or leak from a container were described in Section G-4b(2), previously.

G-4h Tank Spills and Leakage [40 CFR §264.194(c)]

Contingency plan will be implemented, as necessary, should an accidental release of liquid occur from the recycling process equipment or generator accumulation tanks or transfer facility. The procedures to be implemented when responding to a spill or leak were described in Section G-4b(2), previously.

G-5 EMERGENCY EQUIPMENT [40 CFR §264.52(e)]

The type and physical location of facility's emergency equipment, including fire equipment, spill control equipment, breathing apparatus and medical treatment facilities is presented in Attachment G-3. A brief discussion of each aspect of the Emergency Equipment follows.

1) Communications System

- telephone/public address system
- sound 911 personal protection signal horn

2) Fire Control Systems and Equipment

- fire extinguishers
  - 4 ANSUL 10 lb ABC Type
  - 1 ANSUL 20 lb BC Type
  - 1 KIDDE 200 lb BC Type
  - 1 KIDDE 5 lb BC Type
- fire hydrants - 2 hydrants located directly in front of facility

3) Spill Control Equipment

- absorbent material:
  - Sorbent Pad - 3M Type T-156 (24" x 24")
  - Industrial Absorbent - EVCO (50 lb bags)

4) Health and Medical Emergency Equipment/Supplies

- respirators (Wilson Model 1070 Full-face respirator)
- SCBA (3 MSA Mask Model 401 Pressure Demand)
- Safety shower & eye wash (connected to city water supply)
- first-aid kit (DOT Health Care Cabinet sized for 20 people)
- gloves (leather and chemical resistant)
- boots & shoes (chemical resistant)
- company uniforms (daily change provided)
- total body coveralls (available)

G-6 COORDINATION AGREEMENTS [40 CFR §264.37/§264.52(c)]

To familiarize police, fire department and hospital officials with the layout of the facility, properties of the hazardous wastes handled at the facility and associated hazards, entrances to the facility, possible evacuation routes, and other aspects of the facility, copies of the contingency plan have been submitted to the appropriate officials.

Each person, or the chief officer of each department, agency or organization which received a copy of the contingency plan was asked to sign a Coordination Agreement form to acknowledge that he/she reviewed the plan, understood the department's, agency's, or organization's role under the plan, and that all members of the department, agency, or organization will be informed of the plan's content and their individual responsibilities. Signed agreements are maintained on file in the office.

G-7 EVACUATION PLAN [40 CFR §264.52(f)]

If an emergency occurs which cannot be adequately responded to by plant personnel, the Emergency Coordinator will signal employees by way of facility public address system to evacuate the facility. Employees will exit the facility by the most expeditious route (refer to Attachment G-4 for emergency routes). Once outside the building, employees will meet at the parking lot in front of the facility to be accounted for. The Emergency Coordinator will then notify the proper emergency response teams. The Emergency Coordinator, based on this assessment, may deviate from established procedures in order to effectively and safely respond to emergency situations.

G-8 REQUIRED REPORTS [40 CFR §264.56(j)]

As required, any emergency event requiring implementation of the contingency plan will be reported in writing to the MDNR Director within fifteen (15) days of the event. This report will, at minimum, contain:

1) Name, address, and telephone number of the owner or operator;

2) Name, address, and telephone number of the owner or facility;

3) Date, time, and type of incident (ie. fire, explosion);

4) Name and quantity of materials involved;

5) The extent of injuries, if any;

6) The assessment of actual or potential hazards to human health or the environment, where this is applicable; and

7) Estimated quantity and disposition of recovered material that resulted from the incident.

It will be the responsibility of The Risk Management Group of Detrex Corporation to submit reports to the appropriate agencies and to retain on file all applicable information in the event that the contingency plan was implemented.

The Risk Management Group of Detrex will also inform the appropriate departments, agencies and authorities that clean-up is complete before operations at the facility resume.

Detrex will place in the operating record all reports of any incident that requires implementing the contingency plan.

G-9 AMENDMENTS TO THE CONTINGENCY PLAN [40 CFR §264.54]

The contingency plan will be reviewed and immediately amended, if necessary, whenever:

1) the facility permit is revised

2) the plan fails in an emergency

3) the list of emergency coordinators changes

4) the list of emergency equipment changes

5) the facility alters its design, construction, operation, maintenance, or other circumstances in a way materially increasing the potential for fires, explosions or releases of hazardous waste/or hazardous waste constituents

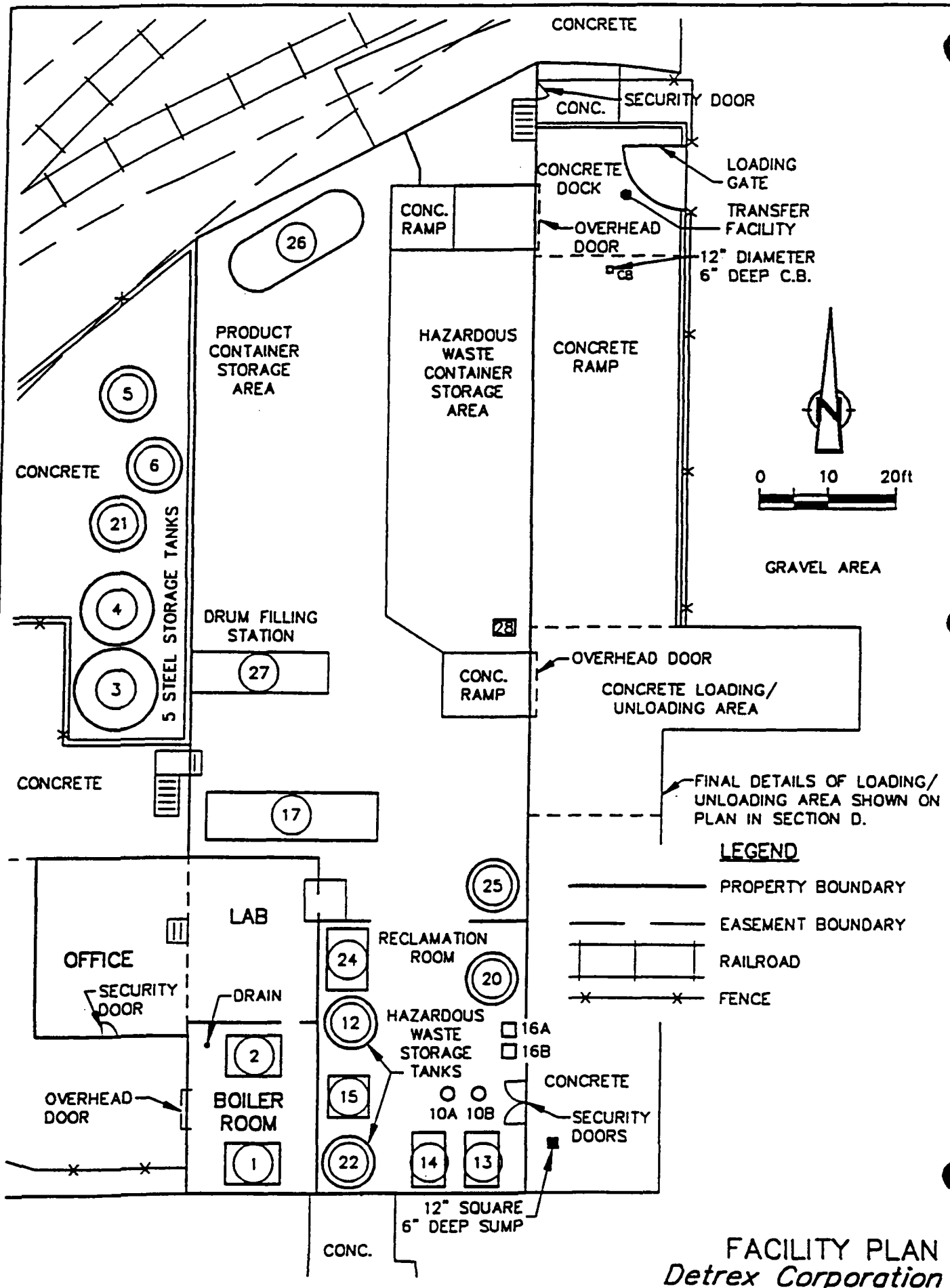
6) the actions/responses necessary to comply in an emergency situation change

All changes in this plan will be sent to every person, agency, department and organization on the contingency plan distribution list within 30 days of the effective date of the change.

ATTACHMENT G-1

FACILITY PLAN

ATTACHMENT G-1



FACILITY PLAN
Detrex Corporation
Eaton Avenue Facility, Detroit

CRA (REVISED 09/03/91)

Date: 09/03/91
Revision: 91-2

LIST OF PROCESS EQUIPMENT

I.D. No.	*Equipment Name*	*Description*
1.	Generator	Clayton Model E-100 Steam Generator. Unit burns natural gas to produce steam at the rate of 3450 lbs./hr. at 100 psig.
2.	Air Compressor	
3.	20,000 gal. Product Tank	20,000 gallon carbon steel storage tank for storage of 1,1,1 Trichloroethane.
4.	10,000 gal. Product Tank	10,000 gallon carbon steel storage tank for storage of Trichloroethylene
5.	4,500 gal. Product Tank	4,500 gallon carbon steel storage tank for storage of Perchloroethylene.
6.	4,500 gal. Product Tank	4,500 gallon carbon steel storage tank for storage of Trichloroethylene
10 A/B	2 - 600 gal. Receiver Tanks	Used for receiving product from Detrex stills. (Operated at atm. pressure).
12.	2,300 gal. Hazardous Waste tank storage tank	2,300 gallon carbon steel storage tank used for storage of F001 or F002 material prior to processing
13.	350 gal. Detrex Still	Detrex Model S-350. Used for recovering chlorinated solvents from spent solvents from degreasing operations (F001 material) via distillation. This unit can process approximately 2,000 gallons/day.
14.	350 gal. Detrex Still	Detrex Model S-600. Used for recovering chlorinated solvents from spent solvents from degreasing operations (F001 material) via distillation. This unit can process approximately 2,000 gallons/day.
15.	DCI Still	DCI Model Dyna-1-100 Solvent Recovery Still. Used to recover chlorinated solvents from still bottoms from recovery of same (F002 material) via live steam injection. This unit can process approximately 100 gallons per hour.
16 A/B	Drying Columns	Detrex Dual Column Drier. Used to remove water from recovered product (solvent) via adsorption.

Date: 09/03/91
Revision: 91-2

LIST OF PROCESS EQUIPMENT

I.D. No.	*Equipment Name*	*Description*
17.	5,000 gal. Still Bottom Tank	5,000 gallon carbon steel storage tank. Used for temporary accumulation of still bottoms from recovery of chlorinated solvents (F002 material).
20.	2,500 gal. Holding Tank	2,500 gallon 316 stainless steel storage tank used for storage of reclaimed solvent.
21.	4,500 gal. 1,1,1 Trichloroethane	4,500 gallon carbon steel storage tank for storage of 1,1,1 Trichloroethane.
22.	4,500 gal. Hazardous Waste Storage Tank	4,500 gallon carbon steel storage tank used for temporary storage of F001 or F002 material prior to being processed by Detrex stills.
24.	DCI Still	DCI Model Dyna-1-500 Solvent Recovery Still. Used to recover chlorinated solvents from still bottoms from recovery of same (F002 material) via live steam injection. This unit can process approximately 500 gallons per hour.
25.	3,000 gal. Holding Tank	3,000 gallon 316 stainless steel storage tank used for storage of reclaimed solvent.
26	SVRM - Carbon Absorption Unit	
27.	Drum Filling Station	Product Drumming Station. Used for filling 55-gallon drums with product. Unit can fill approximately 30 drums per hour and is operated as necessary.
28.	Product Blending Vessel	550 gallon carbon steel vessel utilized for product blending.

SECTION 7

DATA MANAGEMENT PLAN

DETREX CORPORATION
MID 091 605 972

TABLE OF CONTENTS

SECTION 7

DATA MANAGEMENT PLAN

1. INTRODUCTION

The function of the data management plan will be to document and track RFI data and results. The plan will identify and establish data documentation materials, procedures and project file requirements. A project file will be established for the project. The project file will be considered the official record of the investigation.

2. DATA COLLECTION RECORDS

The project file will contain data records of data generated during the RFI. The data record will include:

- information regarding unique sample or field measurement codes;
- sampling or field measurement locations and sample measurement types;
- sampling or field measurement raw data;
- laboratory analysis identification numbers;
- properties or components measured and the results of the analyses;
- boring log sheets; and
- chain-of-custody forms.

The project file will also include the field notes of RFI activities. The field notes will be recorded in a field logbook. Field measurements, sampling equipment used, a detailed description of sampling location, date, time, depth, volume, and sampling identification number will be recorded in the field logbook.

3. TABULAR DISPLAYS

Tabular displays will be contained in the project file. Tabular displays will present raw data, the results for each constituent monitored, the data reduction technique for statistical analysis, and data summaries.

4. GRAPHICAL DISPLAYS

Graphical displays will be contained in the project file. Graphical displays will show sampling locations and sampling grid, the boundaries of the sampling area, and areas where more data are required. In addition, the project file will contain displays of the levels (averages and maxima) of contamination at each sampling location, the geographical extent of contamination, the changes in concentration in relation to the distance from the source, time, depth or other parameters as appropriate, and migration pathways and potential receptors.